Paper TRADE JOURNAL

JANUARY 13, 1949

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"The challenges of today are also the opportunities of today."
CHARLES F. KETTERING

Life is change. In a dynamic world nothing is static.

Inevitably, each new year brings with it new problems; but progress itself represents merely problems met and solved.

The pulp and paper industry, which has wrought so well in the past, will strive onward in '49.

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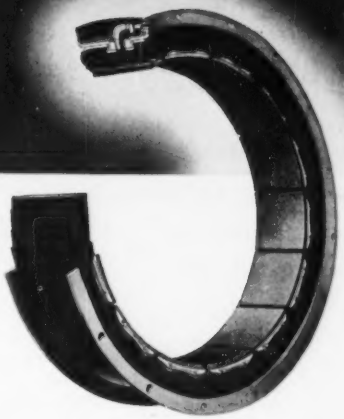
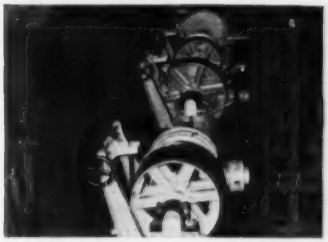


Fawick Airflex Clutch or Brake Type CB

Fawick Airflex Clutch on Calender Drive of No. 2 paper machine at Howard Smith Paper Co., Ltd., Cornwall, Ont.



Fawick Airflex Clutches on 3 press drives of No. 2 paper machine at Howard Smith Paper Co., Ltd., Cornwall, Ont.

Fawick Airflex Clutches supplied on Black Clawson dryer section drives.

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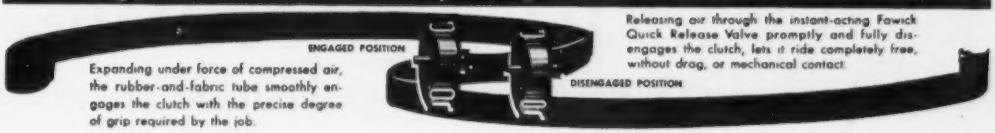

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MEMBER

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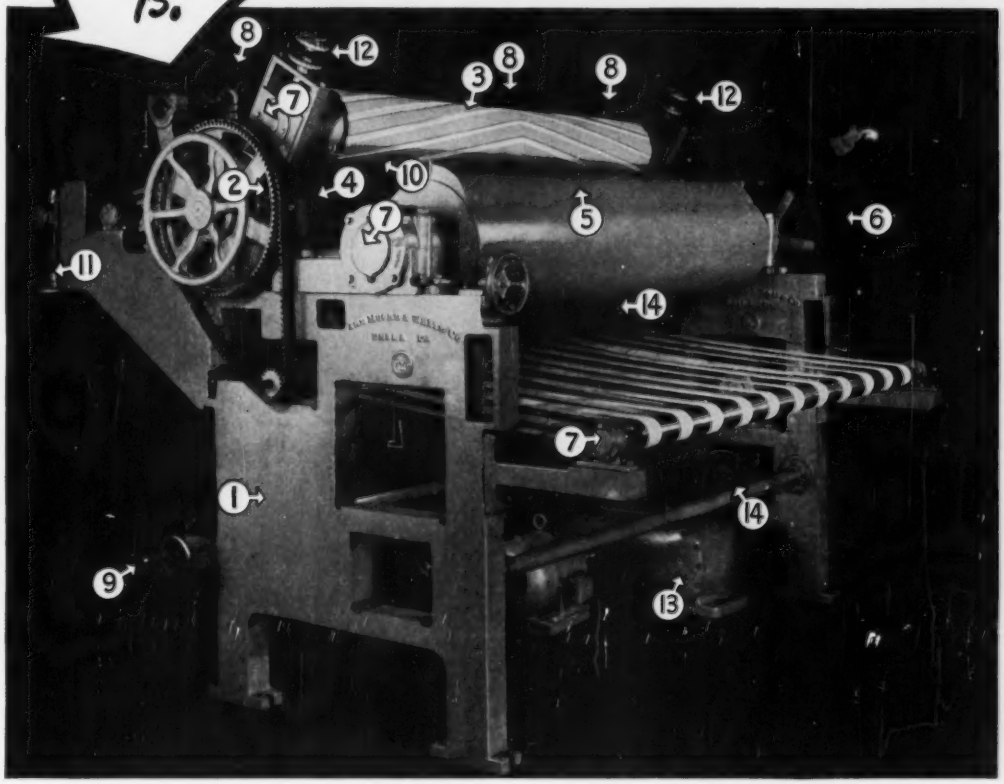

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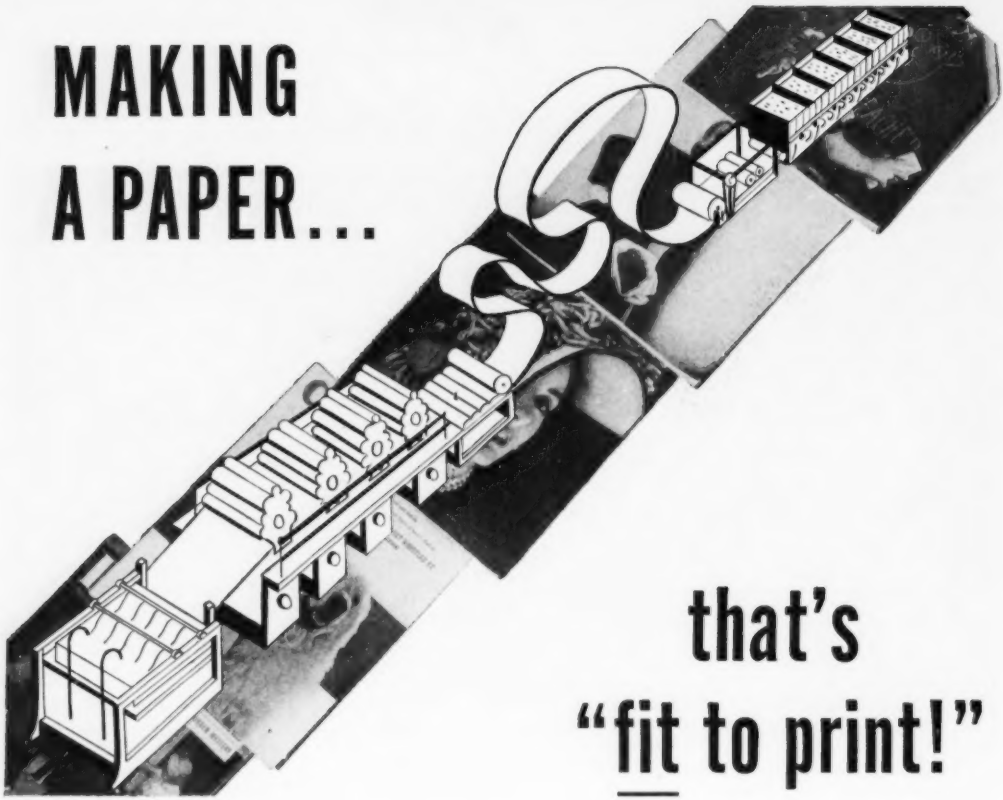

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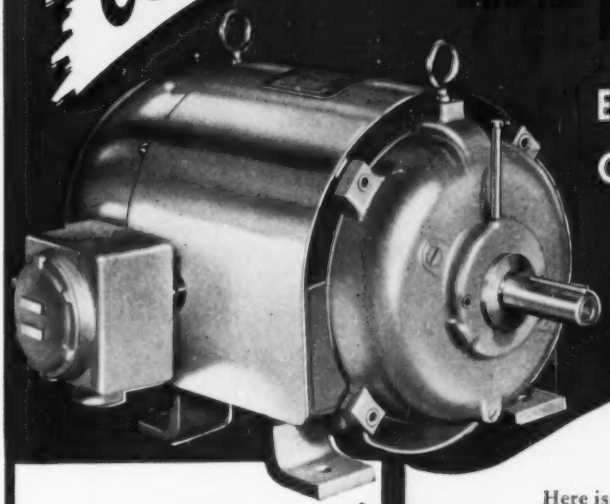

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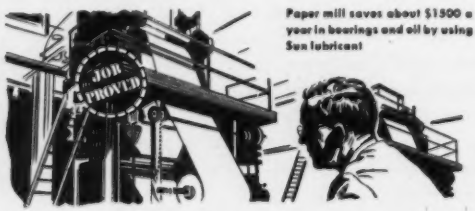

Paper mill saves about $1500 a year in bearings and oil by using Sun lubricant

SOLNUS OILS—Well-refined straight mineral oils. Stand up under hard use for long periods of time. Recommended for use in machine tools, air compressors, certain types of diesels, etc.

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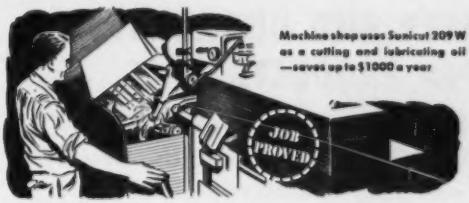

Machine shop uses Sunicut 209W as a cutting and lubricating oil—saves up to $1000 a year

SUN ROLLING OILS—Straight and emulsifying oils which will permit maximum production in rolling steel, aluminum, brass, and copper.

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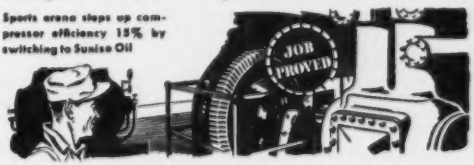

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Worsted mill obtains easier scouring, better quality, larger yield with Sunotex WO-220

SUN ASBESTOS FIBER CONDITIONING OIL—Used for spraying on the asbestos during processing. Fibers are kept from being damaged or broken down, and harmful dust is minimized when this product is used.

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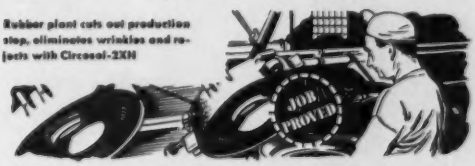
CIRCOSOL-2XH—An elasticator and processing aid for natural rubber and especially for GR-S. Outstanding for sponge rubber.

CIRCO LIGHT PROCESS AID—A processing agent and excellent softener for natural rubber, natural rubber reclaims, and neoprene synthetic rubber. Used for GR-S to some extent.

SUNDEX-34—An inexpensive product suitable for processing GR-S and blends of GR-S and natural rubber. An established processing aid for rubber footwear stocks and semihard rubbers.

Rubber plant cuts out production step, eliminates wrinkles and rejects with Circosol-2XH



CIRCOMAR-5AA—A black-colored product for processing natural and GR-S rubber used in tire-making. Also used in reclaiming natural-rubber scrap. Replaces asphalt fluxes. Free-flowing at room temperature.

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Paper TRADE JOURNAL

JAN. 13, 1949

VOL. 128, NO. 1

Calls National Forests Basis of Conservation

Noting that it is little more than half a century since Congress passed the law under which the 152 National Forests are managed by the Forest Service for the benefit of the people of the United States, Lyle F. Watts, Chief of the Forest Service, told Secretary of Agriculture Brannan in his annual report, made public on January 10, that these public forests "still represent the largest tangible accomplishment in forest conservation in this country."

"Our national forest system is in many ways the finest public forest system in the world," he wrote. "It has been and will continue to be the very foundation on which scientific forestry —forest conservation—in America is based."

Declaring that national security and welfare demand sound management and wise use of all forest land, Mr. Watts said that with our growing population and the steady depletion of many forests in private ownership "our national forests and other public forests undoubtedly will play an increasingly important part in the Nation's economy."

Evidence of the downward trend of the private timber supply is found in the growing demand for timber from the National Forests, he said. He pointed out that the 3,800,000,000 board feet of timber cut on the National Forests last year was three times the pre-war cut of 1,250,000,000 board feet and that, according to the report, "Many sawmills that formerly had supplies of private timber are now wholly dependent on national forest timber to keep going."

The report makes clear that the National Forests cannot alone do the whole job of meeting the nation's timber requirements. Although they now have 30 percent of the sawtimber volume they include only 16 percent of the country's 461,000,000 acres of commercial forest land. Furthermore, says the report, "The more accessible and potentially more productive forest lands are for the most part in private ownership. We must still rely on private lands for the bulk of our timber supply."

The continued depletion of the private timber supply, and widespread deterioration of watershed values as a result of poor forest practices on private forest lands, according to the report, emphasize the urgency of repeated recommendations by the Forest Service for measures which will assure better private forest management.

These recommendations include a Federal-state plan for control "of timber cutting and related practices on private land sufficient to prevent destructive practices and to assure that the land is kept reasonably produc-

(Continued on page 50)

Riegel Advances Harrison and Evans

WARD HARRISON
Manager of Production

ROBERT E. EVANS
Secretary

NEW YORK — Ward Harrison has been named manager of production and Robert H. Evans has been elected secretary of the Riegel Paper Corp.

Mr. Harrison will be responsible to Walker Hamilton, executive vice-president and general manager, for manufacturing operations at all Riegel plants located respectively in Milford, Warren Glen, Hughesville, and Riegelsville, N. J., and will also continue his supervision of Riegel timberlands near Acme, N. C. He was with Riegel from 1936 to 1941 in development work. From 1941 to 1948, he was with Ecusta Paper Corp., Pisgah Forest, N. C., ultimately as assistant general manager. He returned to Riegel in 1948 as assistant to Mr. Hamilton.

Mr. Evans has been assistant secretary and assistant treasurer for the past two years. From January, 1942, to October, 1945, he served with the WPB as assistant chief, and later chief of the Pulp Allocation Board. He was formerly with the Fiduciary Trust Co. of New York. Mr. Evans is chairman of the export committee of the American Paper & Pulp Ass'n.

A. P. Mitchell, whom Mr. Evans succeeds as secretary, will continue as vice-president and general sales manager.

Congress Gets Delivered Pricing Bill

WASHINGTON — Senator Edwin C. Johnson, (D-Colo.) on January 5 introduced a bill in Congress designed to eliminate confusion which has arisen among interstate commodity shippers as a result of the basing point decision of the Supreme Court, and on which numerous paper manufacturers and others have testified as to its adverse effects.

The bill, as outlined by Senator Johnson, will permit sellers individually, and in good faith, to absorb transportation costs when necessary to meet competition in distant markets. In the absence of a conspiracy among companies, individual sellers also my sell their products at the same prices to all buyers throughout the country.

At the same time, authority of the Federal Trade Commission is bolstered in so-called conspiracy cases, and the Commission may also specifically order companies to establish f.o.b. mill prices and to give their customers a choice of the f.o.b mill price or a delivered price not in excess of the f.o.b price plus transportation costs.

Taking cognizance of testimony recently before the Trade Policies Subcommittee, of which he is chairman, Senator Johnson said:

"The evidence before the Committee showed that requiring all industry to sell at f.o.b. factory prices would be extremely harmful to the entire economy, including not only owners of the factories which would have to be relocated but also to the workmen in these factories who would either have to sell their homes to follow their employment to new cities, or seek employment in new industries."

He emphasized that his bill does not condone actual conspiracy to fix prices, and in fact "make it clear that all such conspiracies are illegal."

The Johnson bill is S. 236.

St. Regis' Tacoma Kraft Paper Mill

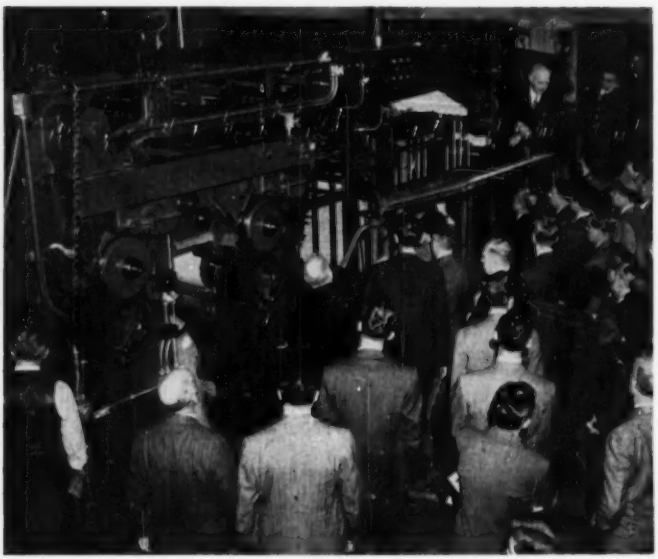
NEW YORK—The St. Regis Paper Co., reports to *Paper Trade Journal* the bringing into production of a new kraft paper mill at Tacoma, Wash. "This just about completes the current phase of the company's broad program of integration, modernization and expansion," Roy K. Ferguson, St. Regis president said. He added that part of the pulp manufactured by St. Regis at its Tacoma sulphate pulp mill will be concerted into paper at Tacoma and then into multiwall paper bags in the company's western factories. To round out the integration, the company acquired during the past several years substantial timber resources in the Northwestern area.

Begun late in 1947, the kraft paper mill at Tacoma houses a Pusey & Jones Fourdrinier paper machine designed to produce multiwall kraft paper 168 inches wide at a rate of 2,100 feet per minute. This represents a capacity to produce 240 tons of this type of paper every 24 hours.

In choosing Tacoma as the site for the company's eighth kraft paper mill, Mr. Ferguson said: "The city was chosen because it offered an exceptional combination of geographical and industrial advantages which would make possible a completely integrated operation on the Pacific Coast."

Heretofore, the sulphate pulp of the company's Tacoma pulp mill has been sold as market pulp or converted at other kraft paper mills of the company. With the completion of the new paper mill, part of the pulp will be converted at Tacoma, with the balance still available for the company's pulp customers.

PRINTING PAPERBOARD BY GRAVURE PROCESS



The Robert Gair Co., Inc., is now producing sheet-fed gravure printing on paperboard for the first time in this country, at its Piermont, N. Y., plant. . . . Attending a recent lecture on gravure processes, the firm's salesmen toured the plant to see the presses in operation. One is a single-color press and the other turns out two-color work. . . . Norman F. Greenway, vice-president, states that Gair's new process is expected to revolutionize the firm's graphic designing. . . . Halver T. Sorensen is technical adviser on gravure printing at the Gair company.

Financial Execs. Meet

NEW YORK—Five hundred financial executives from companies in all types of business throughout the United States will participate in a two-day conference of the AMA's Finance Division at the Statler Hotel on January 20-21. Special sessions of the meeting will be devoted to the public relations of current profits and sources of funds for present and future capital requirements.

A panel of experts will explore the public misunderstanding of the nature and distribution of profits in the light of the current controversy over business profits. Ways and means of conveying an accurate picture of its company financial position to stockholders, employes and the public, and the relation of profits to costs, wages and prices, will be given special attention.

The panel includes Ralph A. Hayward, president of the Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich., and six other experts in this field.

Sources of funds for current and future capital requirements in the light of the difficulty of obtaining equity capital for replacement and expansion

at a time when stocks are selling at prices relatively depressed in relation to earnings and rising costs, will be discussed by a Capital Sources Panel led by Murray Shields, AMA finance vice-president and vice-president of the Bank of the Manhattan Co., New York.

At other sessions of the two-day meeting E. C. Alvord, Washington tax attorney, will discuss the probable course of taxation and Dr. Marcus Nadler, professor of finance, New York University, will talk on the future trend of interest rates.

The impact of inflation on corporate policies will be analyzed in a paper by Ralph C. Jones, associate professor of economics, Yale University. Randoph W. Hyde, treasurer, Carnegie-Illinois Steel Corp., Pittsburgh, will speak on the use of the appraisal of management as a factor in granting credit to customers. Key factors in inventory planning will be enumerated by A. W. Zelomek of the International Statistical Bureau, Inc., New York.

Laramie Pulpwood Plan

NEW YORK—A news story in the December *22* issue of the *Denver Post* datelined Laramie, Wyo., said: "The possibility that the cutting of timber for paper pulp may soon be a new Laramie industry was revealed here Wednesday by David S. Nordwall, supervisor of the Medicine Bow national forest.

"Nordwall said he has received a request from a Michigan pulp manufacturer for information concerning the availability of timber in the Medicine Bow forest.

"The forest supervisor said timber in the forest is highly satisfactory for the making of pulp used to manufacture commercial grade paper.

"Nordwall said a pulp operation is considered beneficial from a forestry standpoint because small timber left over in a normal logging operation is used."

In response to a request for verification and amplification, from *Paper Trade Journal*, Mr. Nordwall wired: "Inquiry to which you referred received from Charles G. Ericson, Negaunee, Mich. Understand he is interested in the cutting rather than the manufacture of pulp."

Lays Cornerstone

CHANDI, CENTRAL PROVINCES, INDIA —The foundation stone of this country's first newsprint factory was laid on December *26* by the Provincial Premier, Pandit Ravishanker Shukla. The factory is expected to start production before the end of 1949 and will, in the beginning, manufacture 100 tons of paper per day. India's annual need is estimated at more than 90,000 tons.

Closed Down Indefinitely

HUDSON, N. Y.—The Ancram Paper Mill closed down indefinitely on December *29*.

U. S. Quarterly Packaging Industry Data

WASHINGTON — The Department of Commerce has begun new quarterly statistical reports on the packaging industry.

The first issue contains data and charts on materials consumption, production volume, supply and demand, shipping and consumer trends, employment, wages and hours and breakdowns on specific types and sizes for glass, metal, paper and paperboard, wooden, burlap bag and other kinds of containers. It also contains information on heat-sealing of moisture vapor barriers, in which faulty methods and equipment have been a principal cause of package failures.

A major reason for starting this report service, according to a foreword, is expansion of the packaging industry to the point where "it is today one of the major basic industries in our national economy and makes a substantial contribution to the well-being of that economy."

In a section on the outlook for the container and packaging industry, the first report states that "It should be kept in mind that until all factors limiting maximum production of all containers are removed so that natural demand is no longer influenced by shortages of any nature, no container field will be immune to what may appear at times to be drastic customer changes or trends. Over-optimism, consequently, in new markets and product outlets should be guarded against."

After asserting that the national defense program, under present policy, should not cause alarm, or disruption of planning for container manufacturers, the forecast cites recent industry reports as indicating that 1949 "will probably be the most important year in the last decade insofar as the advancement of certain types of new packaging methods and techniques are concerned." It lists some of these as visibility packaging, pre-packaging and unit packaging, more colorful design and display, convenience in use and handling, more efficient materials handling and reduction of damage and pilferage in freight shipments.

The first report was prepared by Charles A. Lewis under the general supervision of Charles P. Redick, chief of the department's General Products Division. The reports are available at the yearly subscription rate of 60 cents from the Superintendent of Documents, U. S. Government Printing Office, and from Department & Consumer field offices.

Seeks Receivership

NEW HAVEN, Conn.—A petition that a receiver be appointed for the Early Paper Co. was filed with Superior Court here on December *22* by Mitchell B. Stock of Fairfield.

Defendants in the action are Herman E. and Frank W. Stock, both of New Haven.

Salvages Pulpwood

VANCOUVER, B. C. — Salvaging of slash residue from logged-over lands was formerly burned as waste to eliminate fire hazards, carried on by the Canadian Western Lumber Co., Ltd., is yielding 150 cords of pulpwood per day, R. J. Filberg, vice-president, discloses.

CRYSTAL VETERANS RECEIVE AWARDS

Middletown, Ohio—Fifteen employes of the Crystal Tissue Co. and the Crystal Waxing Co. received 25-year service watches from E. E. Grant, president of the firms, at the company's annual Christmas Party, attended by over 700 employes and members of their families. . . . Those thus honored were: Paul Craig, Sr., Harry W. Dollinger, Howard H. Harrison, Emma Hansel, Ralph W. Helsinger, Albert E. Hall, Jasper Kievit, Allen Lester, Harry S. Osborn, Charles Riddell, Henry B. Rusche, Nea C. Stone, Roy Selby, William Morton Wells, and James C. Worsham.

Select Committee on Newsprint and Paper Supply

December 31, 1948.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed.

Mr. Brown of Ohio, from the Select Committee on Newsprint and Paper Supply, submitted the following

FINAL REPORT

[Pursuant to H. Res. 58, 80th Cong.]

I. Introduction

The Select Committee on Newsprint and Paper Supply was appointed pursuant to House Resolution 58 of the Eightieth Congress which reads as follows:

Resolved, That there is hereby created a select committee to be composed of five Members of the House of Representatives to be appointed by the Speaker, one of whom he shall designate as chairman. Any vacancy occurring in the membership of the committee shall be filled in the same manner in which the original appointment was made.

The committee is authorized to conduct a study and investigation of all matters related to the need for adequate supplies, for use in the United States (including use in time of war), of newsprint, printing and wrapping paper, paper products, paper pulp and pulpwood, and of all matters related to means by which adequate supplies thereof may be produced or secured, with particular reference to—

(1) the short-range and long-range possibilities of increased production thereof in the continental United States (including Alaska);

(2) the short-range and long-range prospects of securing increased supplies thereof from Canada and other sources outside the United States; and

(3) the extent to which agencies or officers of the United States may be able to assist in furthering the objective of securing increased production and supplies thereof.

The committee may from time to time submit to the House such preliminary reports as it deems advisable; and as soon as practicable during the present Congress shall submit to the House its final report on the results of its study and investigation, together with such recommendations as it deems advisable. Any report submitted when the House is not in session shall be filed with the Clerk of the House.

For the purpose of carrying out this resolution the committee is authorized to sit and act during the present Congress at such times and places within the continental United States (including Alaska) or Canada, whether the House is in session, has recessed, or has adjourned, to hold such hearings, and to require, by subpena or otherwise, the attendance and testimony of such witnesses and the production of such books, records, correspondence, memoranda, papers, and documents, as it deems necessary. Subpenas may be issued under the signature of the chairman of the committee or any member of the committee designated by him, and may be served by any person designated by such chairman or member.

The committee was organized on March 3, 1947, and during March and April of that year held a series of exploratory and executive sessions during which study and attention were given to testimony and information obtained on the paper supply subject by other committees and agencies of the Government. A number of conferences and discussions were held with representatives of various publishers' organizations and consumers of newsprint and paper supplies.

During May and June of 1947 a series of public hearings were conducted by the committee from which much important information on the paper supply problem was obtained. The findings of the committee, as a result of these hearings were contained in the interim report submitted to the House by the chairman, Mr. Brown, on July 22, 1947. In the interest of economy, contents of the interim report will not be repeated here.

GEORGE H. CORDES

—appointed New York Representative for the Crocker-McElwain Co., Holyoke, Mass. . . . Mr. Cordes was connected with the Jessup & Moore Paper Co. for more than 20 years and was its New York sales manager for the past seven years. He will be located at the Crocker-McElwain office at 41 Park Row, Cortlandt 7-6663.

II. Committee Objectives and Activities

While the principal objectives of the committee, as fixed in the House resolution establishing it, has been to increase paper supplies available to United States consumers and to increase the production of all types of paper within the continental United States, it soon became apparent the committee should accept another responsibility. Many smaller newspaper publishers were finding it most difficult, if not practically impossible, to obtain the newsprint necessary to continuance of their publications. Other consumers of paper and paper products were finding the paper shortage seriously interfering with the conduct of their business. It was only natural that these publishers and consumers should turn to their representatives in Congress for assistance. A majority of the House membership, as well as many Members of the Senate, brought the newsprint and paper needs of their constituents to the attention of this committee.

Through the cooperation, and with the assistance, of the newsprint and paper manufacturers of the United States and Canada, the various publishers' associations and individual publishers of larger newspapers, the committee was able to assist in obtaining needed supplies for practically all of these distress cases.

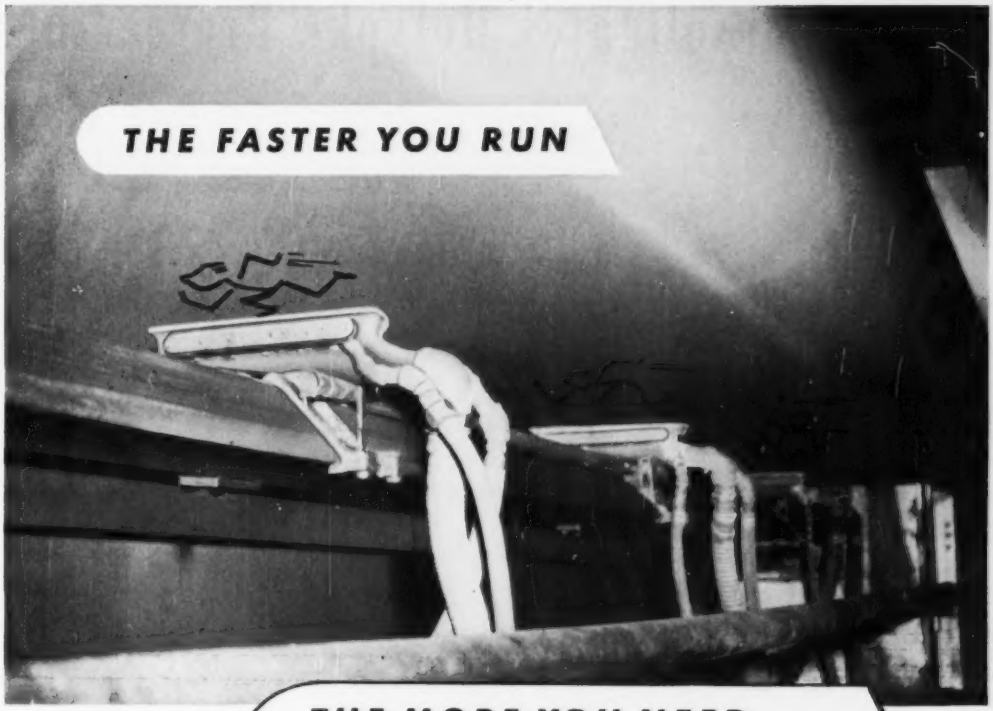
While many newspapers were compelled to go on "short" rations and carefully husband their newsprint supply, or to reduce its use, to the knowledge of the committee, not a single newspaper in the United States was forced to suspend publication at any time during the past 2 years because of lack of newsprint.

This committee is proud of its record in helping the Members of the Eightieth Congress to render an unusual and worth-while service to their constituents.

Throughout its life this committee and its membership has worked closely with various private groups and governmental agencies in the study and survey of available pulpwood supplies in the continental United States and Alaska, and in furnishing information and assistance to various publishers' organizations, business concerns, and corporations who have shown an interest in establishing and constructing mills and other production facilities for manufacturing newsprint and other types of paper.

In this connection the committee points to heavily increased newsprint and paper production in the southwest section of the United States, through

(Continued on page 56)



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The "Jordan" type Conditioner box

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May we mail you the new Vickery Felt Conditioner bulletin?

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F. P. C. Consolidates Holyoke Proceedings

HOLYOKE, Mass. — The Federal Power Commission on January 6 consolidated proceedings of two rival applications for licenses to build a hydro-electric project on the Connecticut River at the Holyoke Dam.

The commission said it will start a hearing here on February 15 on applications by the city of Holyoke's Municipal Gas and Electric Department, and the Holyoke Water Power Co., the latter representative of the indentured rights held for a century on the three-level canal system by Holyoke's major paper manufacturers.

The Water Power Co., wants to install one 15,000 kilowatt hydro-electric power unit, with an ultimate installation of 60,000 kilowatts.

The Municipal Gas and Electric Department plans initial installation of two 15,000 kilowatt units, with two others to be installed as needed to bring the capacity to 60,000 kilowatts. It also plans to provide power for industrial consumers in Holyoke and manufacturers in South Hadley Falls, currently serviced by the Holyoke Water Power Co.

Coincidental with the announcement in Washington of the FPC's plans to consolidate hearings came action by the Municipal Gas and Electric commission which voted unanimously to instruct Manager Francis H. King to execute a contract with one of the nation's topnotch revenue bond experts and power mediators, in an attempt to reach an amicable settlement with the Holyoke Water Power Co., over the issue of control of the river for hydro-electric purposes.

Guy C. Myers of New York and Seattle, a public power financial specialist and a fiscal agent in disputes between public and private utilities, will attempt to solve the local impasse of both Holyoke parties.

According to the terms of the contract, if Mr. Myers fails to provide a solution, no fee will be levied by him. In the event he arranges an agreement acceptable to both utilities and it then is discarded, a minimum fee of $2,000 will be asked. If his solution is acted upon, he will fix a fee of 2½ percent of the price the municipal department pays for the private company's facilities.

Mr. King said the decision to engage Mr. Myers is not a substitute for the action pending before the FPC, but rather parallels this action. The step was taken to offset charges that the municipal plan for development of the river was a confiscatory move, Mr. King said.

Wisconsin Stream Pollution Hearing

GREEN BAY, Wis.—J. M. Conway, president and general manager of the Hoberg Paper Mills and Milan Boex, manager of the Northern Paper Mills, were among principal witnesses at a hearing concluded here last week on pollution of the Fox River and Green Bay.

The hearing, called by the state committee on water pollution, appointed by Gov. Oscar Rennebohm, was the result of a petition filed with the governor by the Izaak Walton League and signed by sportsmen of the surrounding area.

The paper mills in the Fox river valley which discharge waste sulphite liquor into the stream were principal targets in a series of newspaper advertisements sponsored by firms and individuals urging attendance at the hearing.

Officials of the mills pointed out that they have expended considerable sums in research in an effort to discover an economically sound method of disposing of the waste liquor, and said that a plant at Rhinelander which converts the liquor into yeast and has been in operation since October, 1948, has not yet proven that the process is sound.

The mills did not deny that the liquor destroys fish life, and both Mr. Conway and Mr. Boex indicated that they are willing to act when it can be shown that a process of waste utilization has been discovered that can be put to use without destroying the position of the mills in a competitive market. Pointing out that his mill is already heavily in debt, Mr. Boex said financial interests will not invest in the construction of a waste utilization plant while the process is still in the "experimental" stage.

Mr. Conway said his firm is ready to proceed with construction of such a plant as soon as it has been established that the investment is sound.

The Fort Howard paper mill, which imports its woodpulp and operates no sulphite plant, was not represented at the hearing.

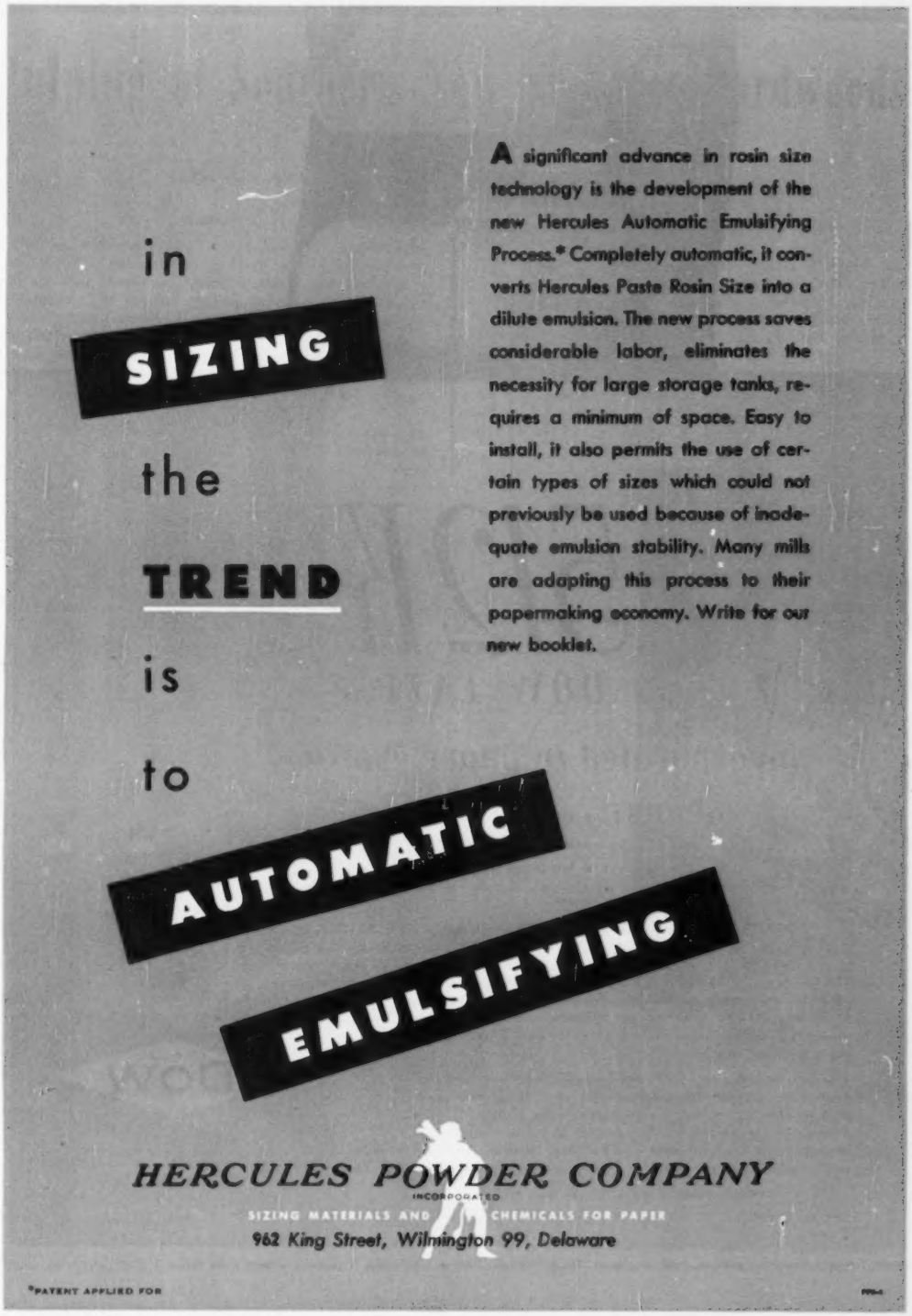
The Rhinelander plant, built at a cost of about $400,000, makes cattle yeast out of the waste liquor, and is the result of studies by the Sulphite Research League, organized by Mr. Conway, in 1939, and to which mills in the Fox river valley have since contributed about $65,000 annually. The league's budget will be doubled in 1949, and the cost prorated among the mills.

Mr. Boex testified it would cost $1,500,000 to build a plant which would handle all the liquor from Northern's 135-ton mill.

Both witnesses said the suggestion that the mills, whose property is adjacent, build a joint plant to dispose of the liquor merited thought.

WIN NATIONAL 4-H CLUB FORESTRY AWARDS

Outstanding farm forestry projects earned $200 scholarships and all-expense-paid trips to Chicago for these 4-H Club members. The awards were presented by American Forest Products Industries, the prize donor, at the twenty-seventh annual National 4-H Club Congress in Chicago last month. . . . Left to right: Fred E. Winch, Jr., assistant agricultural extension forester, Ithaca, N. Y.; Dickie Tucker, 16, Tifton, Ga.; Pearl Gibson, 18, Preston, Idaho; Stewart Brand, 17, Malone, N. Y.; and Harold Davidson, 20, Eau Claire, Wis.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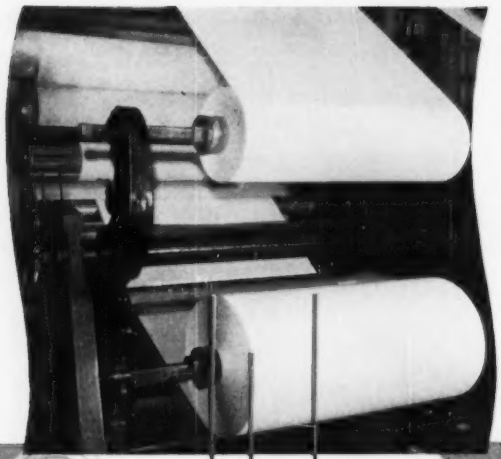

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Pulping of Southern New England Hardwoods

By ROBERT S. ARIES
Professor of Chemical Engineering, Polytechnic Institute of Brooklyn

Abstract

Pulping tests on typical mixed hardwoods, consisting of about 70% oak and beech, birch, maple, and hickory, indicate that they are especially suited for corrugating containers. The neutral sulphite semi-chemical process (NSSC) was found superior to the sulphate process for this purpose.

The finished papers and boxes equal or surpass in their properties kraft paper made from southern pine. The transportation differentials and proximity of markets should make this project attractive.

The Northeastern Wood Utilization Council has made a thorough survey of the hardwood area in Connecticut, Southern New York, Massachusetts, and Rhode Island to find that they can amply support a large scale pulping operation. Engineering plans are now under way for the erection of a paperboard mill in the area. A progress report is made on a process to solve the pollution by burning and reusing the brown liquors.

No one would think of digging for gold in Connecticut and nearby areas, or setting up an ore refinery. The idea of a pulp mill based on local wood supply may sound quite as fantastic. Yet, such a development is being seriously considered, because it would combine two factors in any successful industrial enterprise—access to raw materials and nearness to markets.

A pulp mill requires large quantities of low-grade wood. Connecticut is now a forest state, with about 2 million acres of woodland, or 6 acres out of every 10. This forest acreage is producing each year by natural growth about a million cords, much of it at present unutilized. If adjacent areas in New York, Massachusetts, and Rhode Island were drawn upon, this figure could be doubled. It should not be difficult to secure the 60 thousand to 100 thousand cords a year, which an efficient pulp mill in Connecticut would require, even if the most pessimistic forecasts on available wood supplies are followed.

Can satisfactory pulp and paper be made from hardwood which makes up the bulk of our woodland? One of the most promising trends in the development of hardwood pulp is the use of the semichemical processes which combine cooking and grinding and is especially adapted to hardwood. For certain uses, such as wrapping paper, hardwood pulped by the semichemical process gives a stronger product than softwood. The yield is 50½% higher than in normal pulping, because the pulp retains a considerable portion of the lignin and hemicelulose which ordinarily have to be discarded. The predominant species in Connecticut is oak, with a tannin and mineral element that would make bleaching somewhat more expensive. Bleaching, however, is not required for wrapping paper and containers, uses which account for over half of the paper consumed in the United States.

Now as to markets, Southern New England is the center of the largest paper using area in the United States or of the world, for that matter. A considerable proportion of plants call for paperboard stock of the kraft type which they are now drawing from mills in the South and from abroad. So much paperboard stock is used in this area that the entire output of a Connecticut pulp and paper mill probably could be sold within a radius of a hundred miles or less.

What about comparative labor costs? In a highly mechanized pulp and paper mill, the cost of common labor is only a minor factor. The same thing may hold true to some extent in the woods. In the long run, labor is paid according to what it can produce. With power saws, tractors, and mechanical loaders, workers in the woods will produce twice as much as men who depend entirely upon human muscle.

TABLE I—PULPWOOD SUPPLY IN CONNECTICUT

Counties	% Total Area Forested	M of Acres Forested	% of Total in Softwood Stands	% of Total in Hardwood Stands	% of Total in Age Class 0-20 yr.	% of Total in Age Class 20-100 yr.	M of Acres Ready for Thinnings	M of Cords Pulpwood that Would Be Produced in 1st Thin[1]	M of Cords Pulpwood from Yearly Increment[2]
Litchfield	61	375	18	87	22	78	292	584	75
Hartford	42	198	12	88	43	57	113	226	40
Tolland	63	172	16	84	37	63	108	216	34
Fairfield	51	213	4	96	40	60	128	256	43
New Haven	56	218	3	97	36	64	140	280	44
Middlesex	63	157	4	96	38	62	97	194	31
New London	52	235	25	75	27	73	172	344	47
Windham[3]	—	235	—	—	—	—	172	344	47
Totals	55	1,803	—	—	—	—	1,222	2,444	361

[1] Based on the assumption that a 30% cut in the 20-100 years old stands would produce an average of 4 cords per acre, 50% of which could be utilized as pulp, 50% as logs and muelwood.
[2] Figured on the basis of 1/5 cord of pulpwood per acre per year from all forested areas if cut selectively every 10-20 years.
[3] Estimated. Professor Hawes' 1930 study indicated about the same conditions as New London County.

Data on the untapped pulpwood resources of neighboring areas are given in Table II, indicating the tremendous available stands.

Connecticut has certain other advantages. The State has made a good start in the orderly marketing of forest products, in fact a better start than any other area. A timber owners' cooperative known as Connwood, Inc., organized two years ago, is equipped to cover the State and adjacent areas and secure large contracts not open to the individual owner. Through these contracts, it is in a position to exercise reasonable control over cutting price. Connwood already is shipping pulpwood to a mill in New York State and selling other wood to certain local industries. Connwood, with its interest in sound forestry, could provide the mill with a continuous supply of raw material and at the same time be building up the timber stands of the State for the production of high-grade lum-

ber. A pulp mill in this area may give rise to the unique case in which the establishment of a wood-using industry will actually build up a forest rather than destroy it!

Wood Supplies in Southern New England

The hardwood belt in Southern New England comprising Connecticut, Southern Massachusetts, Rhode Island, and Southern New York, has been a hereto unused area for pulp and cellulose raw material. However, advancements in hardwood pulping have made it possible to use these resources. At the rate of growth of ½ a cord to an acre per year, this area would theoretically give on a perpetual basis over 1 million cords per year, which should be able to produce eventually almost the equivalent amount of tons of pulp. If less than 4% of this wood were used, it would support a 100-ton per day operation.

Reliable figures are available for the State of Connecticut. Data are given in Table I on the pulpwood supply, prepared by the State Forester and checked on the ground by the Federal Reserve Bank in Boston.

(1) Based on the assumption that a 30% cut in the 20-100 year old stands would produce an average of 4 cords per acre, 50% of which could be utilized as pulp, 50% as logs and fuelwood.

(2) Figured on the basis of 1-5 cord of pulpwood per acre per year from all forested areas if cut selectively every 10-20 years.

TABLE II.—PULPWOOD RESOURCES IN MASS., SOUTHERN N. Y., AND R. I.

	Forest Land	Standing Volume, Hardwood Cordwood
Massachusetts	3,000,000 acres	9,200,000 cords
New York Districts 13-14	984,000 acres	3,900,000 cords
Rhode Island (approx.)	453,000 acres	1,300,000 cords
	4,437,000 acres	14,400,000 cords

(3) Estimated. Professor Hawes' 1930 study indicated about the same conditions as New London County.

Data on the untapped pulpwood resources of neighboring areas are given in Table II, indicating the tremendous available stands.

Even if it is assumed that only ⅛ cord per acre would be available for pulpwood, and including only Southern Massachusetts, there is in Southern New England and New York much over 5 million acres and a supply of 750,000 cords per year.

An added advantage in Connecticut is that a pulp mill does not have to buy its woodlands and thus increase its fixed assets. Many paper companies have to follow a very vigorous land acquisition program, thus nearly 16 million acres of commercial forests are now owned by the industry. The cooperative supplying of the wood could alleviate the initial investment for an eventual pulp mill.

Since the question of available pulpwood stands has been most debated, a few other ratios are in order.

It requires about 260 cubic feet of wood to make a ton of pulp by conventional processes, and less than 200 by the NSSC process, using hardwoods. In Georgia, in 1945, 1 ton of pulp was made per 51 acres, while in the top ten states the ratio was 25 acres per ton. Maine made a ton per 15 acres of forest land—on this basis, Connecticut *alone* can support a production of over 100,000 tons of pulp. Thus, before any further expansion can be contemplated in many a state, Southern New England should enter the picture with a large capacity. Southern New England contains roughly 1% of the cubic content of United States forests, yet contributes practically no pulpwood.

It should be clear that Southern New England offers excellent opportunity of pulp and paper production. Even if some unforeseen difficulties should arise, the margin of safety is such that an average mill could be assured of pulpwood supplies. Aside from the wood advantages—and it should not be forgotten that wood is the most expensive material which enters into pulp manufacture—there are a number of other reasons why a pulp mill could be established in Southern New England, which are given later. A large percentage of the pulpwood for example, as well as the finished could be transported by trucks, thereby reducing the costs. Hardwoods are also generally cheaper than softwoods, and because of their greater density yield a larger amount of pulp per cord and per unit of digeter space.

TABLE III.—ACRES OF TIMBER AND CUBIC FEET OF NEW GROWTH PER TON OF WOOD PULP PRODUCED IN 1945 FOR LARGEST PULPWOOD PRODUCING STATES

State	1945 Tons of Wood Pulp Produced (thousands)	Total Land in Forests (thousands of acres)	Acres Per Ton of Pulp	All 1945 Timber Growth (thousands of cu. ft.)	Cu. Ft. Growth Per Ton of Pulp
1. Washington	1,265	24,100	19.04	584,000	461.66
2. Maine	1,098	16,788	15.29	397,000	361.57
3. Louisiana	949	16,196	17.06	631,000	664.91
4. Wisconsin	875	17,000	19.42	215,000	245.71
5. Florida	612	23,478	38.36	310,000	506.54
6. New York	497	13,500	27.15	392,000	788.73
7. Mississippi	477	15,889	33.30	667,000	1,398.32
8. South Carolina	880	10,611	32.96	454,000	1,335.23
9. Georgia	416	21,432	51.49	740,000	1,778.85
Total	7,069	158,994	25.09	4,390,000	723.02

Source: Col. 1, U. S. Census, *Facts for Industry*, Census of Pulp Mills and of paper and paper board mills, 1945; Col. 2 and Col. 4, U. S. Forest Service Bull. Ga. School Tech.

Desired Type of Pulp

In view of the preliminary research results, on the type of pulp which can be made from local woods, which will be described later and general economic considerations, it was decided to aim at container board. While the entire paper industry has made tremendous strides in the last decade, the container box branch has expanded most heavily, without seemingly being able to saturate the market demand. Despite further expansion at present, it is believed that the potential demand is far from being saturated. As an example of its growth since 1940, a few figures can be cited:

PRODUCTION STATISTICS

	1940	1946
Building Paper Production (tons)	682,460	1,011,398
Container Board Paper Production (tons)	3,434,834	4,314,938
Building Board Production (tons)	179,443	1,243,434

Statistics, supplied by the Bureau of the Census on container board, which appears the most promising, are given in Table IV. With increasing competition it is felt that mills using jute and bogus material will tend to use pulp, thus increasing the requirements for the latter.

On the other hand, Massachusetts consumed 755,357 tons of woodpulp in 1946, while Connecticut and Rhode Island consumed 372,779 tons, most of which was brought over considerable distances from this country

TABLE IV.—CONTAINER BOARD INDUSTRY (1946)

	No. of Mills	Tons (2000 lb.)
Total Production	141	4,314,938
Liners, Total	81	2,794,108
Kraft	22	1,557,218
Jute	60	1,234,498
Others	5	2,392
Corrugating Material, Total	81	1,234,340
Kraft	12	195,208
Straw	19	376,853
Bogus	41	414,988
Other	13	247,291
Container Chipboard, Total	52	286,490

or abroad. Again in 1946, the New England States (Maine, Vermont, Massachusetts and Connecticut) produced over 100,000 tons of container board, while New York made 25,000 tons and New Jersey alone made 213,000 tons. Practically all the raw materials for this production is hauled over long distances, while the trend toward integration on the part of southern mills, should give an added stimulus to this development.

Other Economic Advantages

Considering the question of freight rates, it is found that the freight per ton of 0.009 or 0.016 paper from a well-known mill in Louisiana to New Haven, Connecticut, is $16.80 per ton. This freight differential is a strong weapon in favor of a local mill. Even the freight for paper from Virginia to Southern New England is about $10.00 per ton. It should not be forgotten that the increase in freight rates has not yet been checked in order to understand the importance of the situation.

The market situation was delved into previously. There would be no difficulty in disposing of the output of one or more integrated board mills in Southern New England, within 100 miles or less *even* if the demand in general should slacken.

Power and water are available and the question of stream pollution is treated later.

The theory that the recent economic development of the South has been due in large part to the exploitation of low cost labor, is not borne out by the facts, at least insofar as pulp and paper experience is concerned. Southern pulp and paper industry wage rates, and working conditions, contrasted with those prevailing in other regions and industries, stand in a most favorable light.

The Southern pulp and paper industry enjoys no advantage due to low overall labor costs by reason of its location, although other industries undoubtedly do. Such factors as productivity per employee, average size of plant and the population of cities and market areas, should be considered. In many cases skilled workmen in the South enjoy higher rates than in the North.

Experimental Results

Early in 1946, an experimental study was undertaken with the cooperation of Mr. M. W. Phelps of the Solvay Paper Laboratory. In connection with choosing the proper conditions, the pioneering work of the Forest Products Laboratory was of considerable help. The present study will thus not delve into the general background of the NSSC processes, which have been studied by the laboratory for the last three decades.

Hardwood samples were processed by four commercial digestion methods into pulps suitable for paper board and fine papers. The cooking methods and pulp quality was evaluated.

The pulpwood consisted of a mixture of oak (mostly white and red oak) plus hard maple and hickory. Some "soft" hardwoods were also tested, but since the results were very similar, they will be omitted.

The typical analysis is given in Table V, as taken from the literature.

TABLE V.—ANALYSIS OF HARDWOODS

Scientific Name	Hard Maple *Acer saccharum*	White Oak *Quercus alba*
Ash, %	0.4	0.5
Water solubility, %	4.4	7.1
Ether solubility, %	0.3	0.6
1% NaOH solubility, %	17.6	23.4
Pentosan, %	23.2	22.7
Lignin, %	21.8	32.5
C & B cellulose, %	60.8	49.1
Alpha Cellulose, %	41.9	33.2
Holocellulose, %	74.0	75.6
Sp. Gr. moisture-free basis	0.68	0.67
Fiber, length mm	0.7	1.4
Fiber, diameter mu	16-30	——

Procedure

The chips were uniformly sampled and stored in air-tight cans for moisture equilibrium. Chip charge for the board type pulps was taken as received, but for the paper type pulps, the chips were screened and bark removed.

The chips were cooked in a 5-pound rotary digester, gas heated. Pulp from this digester was washed, screened, and pressed. The board type cooks were refined in a laboratory Sprout-Waldron attrition mill prior to final screening.

On each wood sample the following cooks were made:

(a) Semichemical kraft process for board pulp.

(b) Neutral sulphiite semichemical process for board pulp.

(c) Kraft process for paper pulp.

(d) Neutral sulphite semichemical process for paper pulp.

Board Pulps

Data on the board pulp cooking conditions and yield are presented in Tables VI and VII. Strength characteristics are listed in Table VIII.

The hardwoods may be processed to satisfactory corrugating board (9-point specification) by either the semichemical kraft or neutral sulphite semichemical (NSSC) methods. Pulp yields are higher with the NSSC process.

TABLE VI.—DIGESTION CONDITIONS—SEMI-CHEMICAL KRAFT PULP FOR BOARD

White Liquor—Composition	
Total titratable alkali, g.p.l. Na_2O	150.0
Active Alkali, g.p.l. Na_2O	130.6
Sulphidity (TAPPI, %)	24.7
Chip Charge, moisture-free grams	3000
Liquor to moisture-free wood (ratio)	3.3 to 1
Active alkali concentration, g.p.l. Na_2O	22.5
Active alkali basis moisture-free wood, % Na_2O	7.5
Cooking pressure, psi	110
Cooking temperature, °C.	173
Time up to pressure, min.	90
Time at pressure min.	0
Total cooking time, hr.	1½
End Black Liquor	
Active alkali titer, g.p.l. Na_2O	2.5
"Baume' at 60° F.	9.0
Pulp Data	
Yield of screened pulp basis moisture-free wood, %	64.2
Screenings, Refined to %	0.5
G. E. Brightness, %	9.4
Pulp screened through 0.012-cut diaphragm screen.	

On the basis of yields, the neutral sulphite process promises most effective utilization of the available hardwood supply.

The chemical usage in the NSSC process is low, and normally no recovery of the digestion chemicals is practiced. If the NSSC pulping operation is located adjacent to a kraft mill, the black liquor may be utilized as a source of salt cake, or the recovery procedure described later could be used.

TABLE VII.—DIGESTION CONDITIONS
NEUTRAL SULPHITE SEMICHEMICAL PULP FOR BOARD

White Liquor—Composition	
Sodium sulphite, (g.p.l. as Na_2CO_3	112
Sodium bicarbonate, g.p.l. as Na_2CO_3	16
Chemical ratio—Na_2CO_3 basis	7 to 1
Chip Charge, moisture-free grams	3000
Liquor to moisture-free wood ratio	1.7 to 1
Chemical as Na_2CO, basis moisture-free wood %	14.0
Cooking pressure, psi	100
Cooking temperature, °C.	170
Time up to pressure, min.	60
Time at pressure, min.	120
Total cooking time, hr.	3
End Black Liquor	
Residual sodium sulphite, g.p.l.	14.0
'Baume' at 60° F.	9.6
pH	7.2
Pulp Data	
Yield of screened pulp basis moisture-free wood, %	76.0
Screenings, Refined to %	0.5
G. M. Brightness, %	26.9

Pulp screened through 0.012-cut diaphragm screen.

TABLE VIII.—STRENGTH CHARACTERISTICS
SEMICHEMICAL PULPS FOR BOARD

Pulp	Beating Time min.	Burst %	Tear ratio	Stiffness, S. T. Units	Slowness, ° S.R.
Hardwood Kraft	0	33	0.97	1.1	19
Board	5	44	1.09	1.5	20
	20	76	1.03	1.6	31
	35	84	0.91	1.3	44
	50	98	0.97	1.4	62
Hardwood NSSC	0	32	1.23	1.9	17
Board	5	40	1.30	1.7	16
	20	65	1.40	1.7	19
	35	80	1.35	1.6	27
	50	93	1.25	1.5	27
	65	102	1.19	1.4	33
	85	113	1.20	1.4	43

Burst—Per Cent Points Pound/Ream—24 × 36—500
Tear—Grams Force/Pound/Ream—24 × 36—500
Stiffness—Smith-Taber Units, Initial Stiffness
Slowness—Degree on Schopper-Riegler Tester

The strength tests on beaten hand sheets from the semichemical pulps, indicate that the NSSC pulps from both hardwood groups are superior to semichemical kraft in both strength and stiffness. Stiffness is an important factor in 9-point corrugating, and is reflected in the crushing strength of the finished board. The favorable strength factors developed with low heating power are advantageous in mixed furnish liner board, and the NSSC pulp would also serve as a component of a board liner stock.

Paper Pulps

Experimental data on paper pulp cooking conditions, yield and bleaching procedures, are shown in Tables IX, X, XI, and XII. Strength characteristics of the unbleached and bleached pulps are presented in Tables XIII and XIV.

TABLE IX.—DIGESTION CONDITIONS
BLEACHABLE KRAFT PULP FOR PAPER

White Liquor—Composition	
Total titratable alkali, g.p.l., Na_2O	150.0
Active alkali, g.p.l., Na_2O	130.6
Sulphidity, TAPPI, %	24.7
Chip Charge, moisture-free grams	3000
Liquor to moisture-free wood ratio	3.7 to 1
Active alkali concentration, g.p.l. Na_2O	46.5
Active alkali basis moisture free wood % Na_2O	18.5
Cooking pressure, psi	110
Cooking temperature, °C.	173
Time up to pressure, min.	120
Time at pressure, min.	120
Total cooking time, hr.	4
End Black Liquor	
Active alkali titer, g.p.l. Na_2O	8.6
'Baume' at 60° F.	14.9
Pulp Data	
Yield of screened pulp basis moisture-free wood, %	47.7
Screenings, %	0.3
G. E. brightness, %	28
Permanganate Number	10.4

Pulp screened through 0.008-cut diaphragm screen.

TABLE X.—DIGESTION CONDITIONS
BLEACHABLE NSSC PULP FOR PAPER

White Liquor—Composition	
Sodium sulphite g.p.l. as Na_2CO_3	138.0
Sodium bicarbonate g.p.l. as Na_2CO_3	34.5
Chemical ratio—Na_2CO_3 basis	4 to 1
Chip Charge, moisture-free grams	3000
Steamitg time at 0 p.s.i.—100° C., min.	30
Impregnating time at 25 p.s.i.—115° C., (min.	60
Liquor blown back for recovery	
Chemical absorbed, as Na_2CO_3, %	21.0
Cooking pressure, p.s.i.	90
Cooking temperature, °C.	166
Time up to pressure, min.	60
Time at pressure, min.	180
Total cooking time, hr.	4
End Black Liquor	
Residual sodium sulphite, g.p.l.	8.8
'Baume' at 60° F.	—
pH	8.8
Pulp Data	
Yield of screened pulp basis moisture-free wood, %	62.4
Screenings, refined to, %	0.5
G. E. brightness, %	30.0
Permanganate Number	21.9

Refined in Sprout-Waldron mill and screened through 0.008-cut diaphragm screen.

The screened unbleached pulps obtained from the above cooks were bleached and by selected multistage methods. Chemical usages were based on the unbleached pulp charge. The specific bleaching conditions are given in Tables XI and XII.

TABLE XI.—BLEACHING OF KRAFT PAPER PULPS

First Stage—Chlorination	
Chlorine gas consumed, %	3.2
Temperature, °F.	75
Consistency, % moisture-free	3.0
Reaction time, min.	90
End pH	1.1
—Washed—	
Second Stage—Extraction	
Caustic soda added, %	3.0
Caustic soda consumed, %	1.7
Temperature, °F.	160
Consistency, % moisture-free	12.0
Reaction time, min.	120
—Washed—	
Third Stage—Hypochlorite	
Cl_2 as bleach consumed, %	2.8
Temperature, °F.	105
Consistency, % moisture-free	12.0
Reaction time, min.	240
pH control at	8.5 to 9.0
—Washed—	
Fourth Stage—Acidulation	
Sulphur dioxide added, %	1.0
Temperature, °F.	75
Consistency, % moisture-free	3.0
Reaction time, min.	30
—Washed—	
G. E. brightness, %	80.2
Yield basis unbleached pulp, %	91.4

TABLE XII.—BLEACHING OF NSSC PAPER PULPS

First Stage—Chlorination	
Chlorine gas consumed, %	19.4
Temperature, °F.	75
Consistency, % moisture-free	3.0
Reaction time, min.	120
End pH	—
—Washed—	
Second Stage—Extraction	
Caustic soda added, %	2.0
Sodium sulphitte added, %	0.5
Temperature, °F.	120
Consistency, % moisture-free	6.0
Reaction time, min.	120
pH held at	11.0 ± 0.5
—Washed—	
Third Stage—Hypochlorite	
Cl_2 as bleach consumed, %	0.7
Temperature °F.	100
Consistency, % moisture-free	6.0
Reaction time, min.	120
pH control at	8.5 — 9.0
—Washed—	
Fourth Stage—Acidulation	
Sulphur dioxide added, %	1.0
Temperature, °F.	75
Consistency, % moisture-free	3.0
Reaction time, min.	30
—Washed—	
G. E. brightness, %	80.3
Yield basis unbleached pulp, %	79.3

TABLE XIII.—STRENGTH CHARACTERISTICS
HARDWOOD KRAFT PAPER PULPS

Pulp	Beating Time min.	Burst, %	Tear, ratio	Tensile, kg.	Fold, MIT-d.f.	Slowness °S.R.
Unbleached	0	38	1.35	3.9	5	15
Kraft Hard	5	54	1.70	5.4	11	16
Hardwoods	20	104	1.68	8.8	190	22
	35	139	1.40	10.6	570	35
	50	148	1.24	11.1	930	51
	65	159	1.20	12.4	1440	65
Bleached	0	40	1.12	3.9	5	16
Kraft Hard	5	55	0.96	4.9	9	18
Hardwoods	20	77	0.66	7.2	100	40
	35	71	0.45	7.7	82	74

Note: Kraft unbleached beaten with 6.5 kg. on test beater. Kraft bleached beaten with 5.5 kg. on test beater.
Burst—Per cent points/pound/ream—24 × 36—500.
Tear—Grams force/pound/ream—24 × 36—500.
Tensile—kg. force/15 mm./50 lb. ream—24 × 36—500.
Fold—MIT double folds/1 kg. tension/50 lb. ream.
Slowness—Degrees on Schopper-Riegler tester.
Hand sheets conditioned at 50% R.H. and 70°F.

TABLE XIIII—STRENGTH CHARACTERISTICS
HARDWOOD NSSC PAPER PULPS

Pulp	Beating Time min.	Burst, %	Tear, ratio	Tensile, kg.	Fold, MIT-d.f.	Slowness °S.R.
Unbleached	0	80	1.49	6.6	67	22
NSSC Hard	5	95	1.58	7.4	90	24
Hardwoods	20	123	1.42	8.4	270	33
	35	144	1.29	10.0	570	43
	50	152	1.16	11.0	780	56
	60	156	1.09	11.4	960	61
Bleached	0	132	1.75	7.7	530	27
NSSC Hard	5	156	1.49	9.6	650	30
Hardwoods	20	175	1.33	11.9	1550	46
	35	188	1.27	13.4	2140	64

Note: NSSC pulps beaten with 2.2 kg. on test beater.
Burst—Per cent points/pound/ream—24 × 36—500.
Tear—Grams force/pound/ream—24 × 36—500.
Tensile—kg. force/15 mm./50 lb. ream—24 × 36—500.
Fold—MIT double folds/1 kg. tension/50 lb. ream.
Slowness—Degrees on Schopper-Riegler tester.
Hand sheets conditioned at 50% R.H. and 70°F.

Comment on Hardwood Paper Pulps

The hardwood chips were readily reduced to paper pulp by either the kraft or NSSC digestion methods. Yield of the kraft pulp was substantially lower than unbleached NSSC pulp. Shive reduction was excellent in the kraft, but the unbleached semichemical pulps show the characteristic shive contamination.

With exception of tear, there is little difference between the developed strength of unbleached kraft and NSSC pulps. Due to the hydrating characteristics of the semichemical pulp, less bed plate weight (and beating power) were required for strength development.

The bleachability of the hardwood kraft was within normal range, indicating that satisfactory brightness could be reached by three or four basic stages of bleaching. The strength characteristics of the bleached kraft are low and correspond to commercial soda or semi-sulphate bleached pulps. It is probable that some improvement in strength could be obtained by using either a basic four stage, Cl_2—CE—Hypo—Hypo or five stage Cl_2—CE—Hypo—CE—Hypo system with acidulation added thereto for color stability. The test data show that bleached hardwood kraft is a filler type pulp, and not adapted to replacement of either bleached coniferous sulphite or kraft pulps in specialty paper furnish.

The NSSC pulp was hard bleaching, involving substantial chlorine usage. The bleached pulp yield from the NSSC process is considerably higher than from the kraft method. Strength values of the bleached neutral sulphite semichemical pulp are remarkably high—equal to bleached sulphite on the soft hardwoods and approaching bleached kraft on the hard hardwoods. The characteristic strength development of NSSC pulps on bleaching is quite evident in this comparative study.

The bleached NSSC pulps may be used to replace, in whole or part, bleached sulphite and kraft in specialty paper furnish. The fast hydrating quality of this type of pulp would make its use advantageous in greaseproof, glassine, waxing and similar paper grades. Its high strength would be useful as reinforcing fiber in magazines, poster and other specialty papers using blended short and long fibered pulps.

Material Consumptions

Assuming average conditions, it is probable that the chemical, material, power, etc., consumptions will be as follows:

	Hard Hardwoods
1. Digestion Process—usage per air-dry pulp ton (Unbleached)	
(a) Semichemical Kraft board Pulp	
Rough pulpwood, cords	1.15
Salt cake, lb.	110
Lime, lb.	165
Power, kw. hr.	350
Steam, 1000 lb.	6.0
Water, 1000 gal.	20
(b) NSSC Board Pulp	
Rough pulpwood, cords	0.96
Soda ash, lb.	365
Power, kw. hr.	450
Sulphur, lb.	100
Steam, 1000 lb.	2.6
Water, 1000 gal.	15
(c) Bleachable Kraft Paper Pulp	
Rough pulpwood, cords	1.55
Salt cake, lb.	300
Lime, lb.	450
Steam, 1000 lb.	8.5
Power, kw. hr.	225
Water, 1000 gal.	20
(d) Bleachable NSSC Paper Pulp	
Rough pulpwood, cords	1.17
Soda ash, lb.	670
Sulphur, lb.	160
Power, kw. hr.	440
Steam, 1000 lb.	1.6
Water, 1000 gal.	15

2. Bleaching Process—Usage per air-dry pulp ton (Bleached)	Soft Hardwoods	Hard Hardwoods
(a) Bleached Kraft Paper Pulp		
Unbleached pulp, lb.	2193	2190
Chlorine as gas, lb.	59	70
Chlorine as hypo, lb.	29	62
Total chlorine, lb.	88	132
Caustic soda, lb.	65	65
Lime for hypo, lb.	26	56
Sulphur dioxide, lb.	22	22
Power, kw. hr.	65	65
Steam, 1000 lb.	3.0	3.0
Water, 1000 gal	60	60
(b) Bleached NSSC Paper Pulp		
Unbleached pulp, lb.	2600	2520
Chlorine as gas, lb.	415	490
Chlorine as hypo, lb.	57	18
Total chlorine, lb.	472	508
Caustic soda, lb.	59	50
Lime for hypo, lb.	51	16
Sodium sulphite, lb.	13	13
Sulphur dioxide, lb.	26	25
Power, kw. hr.	2.4	2.4
Power, kw. hr.	55	55
Steam, 1000 lb.	2.4	2.4

Manufacturing costs may be calculated from the above data. Assuming rough cord cost of $20.00 in the mill yard, which is far above the price at which it can be had, it is estimated that the total costs of the various pulps in slush form may be within the following ranges:

	Cost per A.D. Ton
Semichemical kraft board pulp	$50 — 60
NSSC board pulp	$40 — 45
Unbleached kraft paper pulp	$60 — 70
Unbleached NSSC paper pulp	$40 — 50
Bleached kraft paper pulp	$70 — 85
Bleached NSSC paper pulp	$65 — 75

On the basis of these tests it was felt that the cost of the unbleached NSSC pulps falls within the range of the conventional pulp costs under the pulpwood prices assumed in the above estimate. If the waste liquor from the digestion is recovered, a credit would accrue to the manufacturing cost of the pulp. The favorable price of the unbleached pulp results directly from the high pulp yield in the semichemical process.

The high shrinkage and chemical costs involved in bleaching, result in a high conversion cost. Whereas the normal upcharge for bleaching kraft ranges from $10 to $15 per ton, the conversion cost of bleaching NSSC pulp approximates $25 per pulp ton.

Considering overall pulp quality, capital investment in plant, and manufacturing costs, the neutral sulphite semi-chemical process appears to be the best method of utilizing New England hardwoods for either board or paper manufacture.

Large Scale Test

Encouraged by these data, the Northeastern Wood Utilization Council, undertook large-scale tests at the Herty laboratories with the aid of Messrs. John Shuber and R. F. Traver, from the Solvay paper laboratories. These tests further demonstrated the feasibility of pulping Southern New England hardwoods, making a 9-point corrugating medium which was of a much higher quality than the best commercial board compared to it. The 16-point liner had excellent strength characteristics, except bending, which, however, could be corrected by known means. While bleaching tests were also run, they will not be indicated here as corrugated board has been decided upon as more interesting. Suffice to say the bleached NSSC pulps from Southern New England hardwoods, lend themselves well to the manufacture of greaseproof, glassine, carbonizing, waxing, cup and food carton, and waxed liners. The economics of the bleached pulps also appear favorable.

A typical run had a chemical ratio of Na_2SO_3 to $NaHCO_3$ of 5:1, the percentage chemical on the basis of the wood being about 14%. The concentration, calculated as Na_2CO_3, was about 35 g.p.l. About 2 to 3 hours at temperature were required. The yields were in the neighborhood of 70%. In some cases the bark was left on the pulpwood without any substantial difference in the results.

Recovery of Waste Liquors

It was realized from the onset of thinking about a pulp mill in Connecticut, that the chemical recovery problem would have to be solved before the project could become a reality. Connecticut has very stringent laws on water pollution, especially on a new installation. The fact that Federal legislation would force all mills to recover their liquors in the future, gave little comfort. Thus a research project was started at chemical engineering department of the Polytechnic Institute of Brooklyn on the recovery of NSSC pulping liquors, as there appeared to be no know-how on the subject at the time.

The waste liquors from the NSSC process (which we named the "brown" liquors), should contain sodium ligno sulphonate, sodium salts of organic acids, sodium sulphate and sulphite and residual sodium bicarbonate. After trying a number of possible methods of utilization, a method has been devised which has already been proven on a pilot plant scale, and for which patent protection is being acquired. The process consists of burning the brown liquor in substantially the same fashion and in the same or similar type of furnace as kraft liquors. In general, the organic matter is sufficient to supply the necessary heat. After smelting, a green liquor results, which is much the same as the green liquor from kraft pulping, although it is higher in sulphidity and has minor variations in some of the other properties. This liquor can be used very satisfactorily for kraft pulping and, in fact,

APPROXIMATE MANUFACTURING COST PER TON OF MOISTURE-FREE PULP

(150 ton/day unit assumed)

Item	Units	Cost/Unit	Cost
Wood. Moisture-free basis 4,000 lb. to cord of rough wood or 3,200 lb. to cord of peeled wood. 70% Yield	0.893	$21.00[1]	$18.75
Chemicals 15% basis wood. 70% yield.			
Soda ash, lb. av.	430	0.0125	5.38
Sulphur, lb. av.	120	0.01	1.20
Electric power, kw. hr.	480	0.01	4.80
Labor, man hours	6	1.25	7.50
Steam, 1,000 pounds	2.5	0.50	1.25
Water, 1,000 gallons	20	0.005	0.10
Repair labor	—	2.00	2.00
Repair materials	—	0.80	0.80
Total Direct Cost			$41.78
Mill overhead and fixed charges 15% of $4,000,000 (350 days per year)			$11.43
Gross cost of unbleached slush pulp, moisture-free basis			$53.21
Less credit for recovered chemicals, approx.			5.00
Net cost of unbleached slush pulp, moisture-free basis			$48.21

[1]Cost is indicated on purpose at $5.00 per cord above the present market price in the area, with the aim of conservative thinking and to take care of any contingencies.

may be better than regular kraft makeup liquor for this purpose. However, for an integrated operation, the production of sodium sulphite, as well as sodium carbonate, is necessary. The newly developed process converts the sodium sulphide to sodium sulphite under controlled conditions, thus avoiding the undue formation of thiosulphates and sulphate, which are undesirable. Consistently high yields of Na_2O have been obtained, and this development promises to offer not only a solution for the pollution problem but to be an economical means of recovering the chemicals in the NSSC process, and actually lower the cost of the pulp. Development work on this project is continuing.

Conclusions

The NSSC process, is perfectly feasible on Southern New England hardwoods, even though oak predominates in them and it was considered hard to pulp it heretofore. It gives pulp, with yields over 70%, and corrugating paper of high strength. Interesting results have also been obtained with some of the bleached pulps, which have unusually good properties. Economic factors, such as nearness to markets, vast stands of available pulpwood, and a high world demand for pulp should result in the erection of one or more pulp mills in the area. In the present paper, an attempt has been made to describe the inception and development of an idea necessitating both technical and economic thinking. A few years ago it might have sounded bizarre to talk about a pulp mill in Southern New England, as the eyes of entrepreneurs were focused to distant areas for wood supplies. The concerted attack on this problem, by the Northeastern Wood Utilization Council (a nonprofit organization), coupled with technological advances on the pulping of local hardwoods, have helped bring this development to the attention of the American pulp and paper industry.

Acknowledgments

Thanks are due to Mr. Edgar L. Hermance, Secretary of the Northeastern Wood Utilization Council, Inc. without whose foresight and perseverance this project would have hardly seen daylight and who is also responsible for many of the thoughts expressed in this article. Mr. John Shuber, from the Solvay Process Division, Allied Chemical & Dye Corporation, rendered invaluable assistance in the research work and conducting of the tests.

The Error of a Nomogram for the Calculation of Clark Softness

By GEOFFREY BEALL[1], ROBERT P. ANDERSON[2], and ARLIS A. HARVEY[3]

Abstract

A nomogram based on the formula for Clark softness which has as its basis the Clark instrument used to measure rigidity, stiffness and softness of paper and paperboard, was developed and its accuracy investigated.

It was found that there is little to be gained by employing arithmetic rather than nomographic methods once the physical determinations have been made. The only question is in the realm of convenience; the latter having the advantage of involving something like one-fifth the work of the former.

The results also indicated that the determination of Clark softness would be more reliable if only one operator were employed in making the physical tests.

One of the tests used in the evaluation of soft, limp papers is that of Clark softness *(1)*, for which the formula is

$$S = [10^8 \log (t + 1)]/L^2W,$$

where t is caliper in thousandths of an inch, L is average critical length in centimeters, and W is basis weight (grams per square meter). It appeared that this equation is perhaps sufficiently complex to justify the construction of a nomogram. The question arose, however, as to whether the error introduced by a nomographic solution might not be serious and outweigh the convenience of the device. Inevitably, on the basis of a given set of physical determinations, there must be some discrepancy from the precise result to be obtained by exact numerical solution of the equation. Such exactitude, as that obtained numerically, is somewhat deceptive, however, since manifestly the physical determinations will be subject to some error. It is proposed to compare the calculating error introduced by the nomogram with the experimental error.

TABLE I.—PRIMARY DATA AND CLARK SOFTNESS DETERMINATIONS

Sample	Basis Weight, g./sq. m.	Caliper, in.	Critical Length, cm.	Clark Softness	Operator Mean Softness
		Operator I			
1	59.61	0.0063	9.14	19.0	
2	56.24	0.0067	8.85	22.7	
3	56.49	0.0060	8.95	20.9	20.9
		Operator II			
1	55.99	0.0067	8.84	22.9	
2	56.24	0.0063	8.95	21.4	
3	56.24	0.0062	8.97	21.1	21.8
		Operator III			
1	55.12	0.0066	9.17	20.7	
2	55.85	0.0063	8.93	21.7	
3	55.57	0.0065	9.25	19.9	20.8
		Operator IV			
1	55.96	0.0060	8.95	21.1	
2	56.24	0.0061	8.98	20.9	
3	55.12	0.0061	8.98	21.3	21.1
		Operator V			
1	55.93	0.0066	8.82	23.0	
2	55.06	0.0067	8.69	24.5	
3	55.17	0.0064	8.77	23.4	23.6

In an effort to obtain considerable accuracy, the nomogram shown in Fig. 1 was prepared. The actual results, as discussed below, were obtained by using the original drawing; since the original is 17 by 24 in., the results must be somewhat more accurate than those that could be obtained from Fig. 1. Although it was appreciated that Davis *(2)* published a nomogram that can be used to calculate Clark softness, the present drawing was made because of certain limitations of his drawing. First, it is of a general nature, being designed for the calculation of quality criteria, other than softness; second, it is drawn for a wide range of observations and so is not detailed for any limited range; third, it is small. The present nomogram was constructed with the purpose of securing more accurate results for the particular type of samples tested at The Institute of Paper Chemistry.

The material chosen for trial was two stock packets of Scott Tissue Towels No. 15, 10½ by 14 inches, folded, in packets of 150. Since, as will appear in more detail, it was proposed to discover the experimental variability of a given operator and between operators, it was necessary to get a number of samples, each representative of the material. Accordingly, one packet and half the second were divided into fifteen lots each of fifteen towels, in the order of their occurrence in the packet. From each lot one towel was selected randomly—by the use of Tippett's *(3)* table of random numbers. The fifteen towels thus obtained constituted one sample. It will be appreciated that the procedure eliminated, in large part, any systematic variation of the towels through the packets and distributed justly any random variability among the samples.

Each of five operators, experienced in the determination of Clark softness, was given three of the samples of crepe toweling and made three determinations, independent so far as possible. Thus, the second sample was not tested until the third day after the first and the third sample until the sixth day. For the sample under study on a given day, the average value of basis weight and caliper were determined from five sheets and the critical length from 15 sheets. The numbers involved are those recommended by the TAPPI Standard *(4)* except that basis weight should have been obtained from ten sheets. These average values were substituted in

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the primary equation to find softness, with the results shown in Table I. The samples were conditioned and tested at 50% R.H. and 73° F.

From Table I it will be seen that the variability between the various determinations by a given operator was considerable. How far this variability was due to procedure and how far to the inherent variability of the material cannot here be decided. It will be noted further that the variability between operators was considerable; statistical test[4] shows the latter to be significantly greater than the former.

In order to find the error introduced in the determination of Clark softness by the use of the nomogram, the results of Table I, excepting the solution for softness, were given to each of four operators with some experience in using the nomogram. Their results, shown in Table II, are compared with the arithmetic result from Table I; there is added the deviation of the former from the latter for each sample by each worker. It will be seen that the deviations of Table II are very slight. There is a suggestion, from the total error of each operator, of a general slight negative bias. There is a further suggestion, in the appearance of horizontal rows of similar error, of bias. It is patent that the uncertainty introduced by using the nomogram is trivial compared with the experimental error of Table I.

The importance of various sources of error may be appreciated best by considering the standard deviation, as a measure of the reproducibility of results, under various schemes of work. The details[5] of the calculation are those standard in the analysis of variability. It is supposed that one or many operators are employed in physical testing and that, independently, arithmetic or nomographic calculations are made on his or their test results.

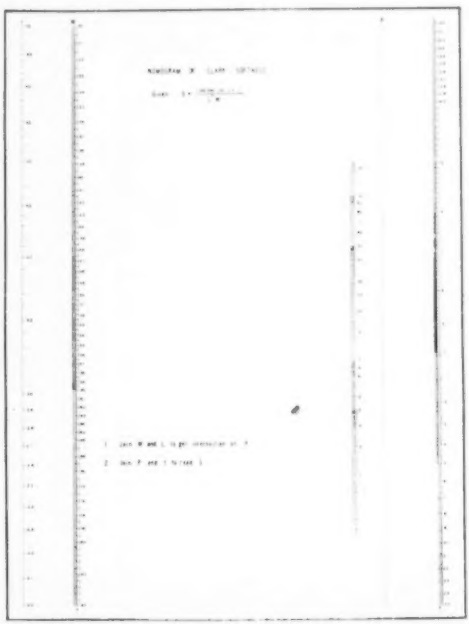


Fig. 1

Under the various schemes, the standard deviation is as follows:

	One Operator	Many Operators
Arithmetic determination	1.078	1.479
Nomographic determination	1.084	1.483

It will be seen that the error introduced by employing a number of operators to make physical determinations, over the situation where one is employed, is great but that the error introduced by the nomogram is negligible.

From the present results it is plain that the determination of Clark softness would be considerably more reliable if only one operator were employed in making the physical tests. Regardless of the bias of such an operator, his results on different runs would be more strictly comparable than if several operators were involved. His results would be more reproducible in the sense that he would get more nearly the same result on a rerun than would a variety of operators. Concentration on the standardization of operators would seem to be very well worth-while in reducing the error of estimates of Clark softness.

On the other hand, there is little to be gained by employing arithmetic rather than nomographic methods once the physical determinations have been made. The only question is in the realm of convenience; there the latter method has the advantage of involving something like one fifth the work of the former.

Literature Cited

1. Clark, J. D., *Paper Trade J.* 100, No. 13: 41-44 (March 28, 1935); *Tech. Assoc. Papers* 18: 234-237 (1935).
2. Davis, D. S., *Paper Ind.* 17: 409 (1935).
3. Tippett, L. H. C., Random sampling numbers. Tracts for computers No. 15. Cambridge University Press. 1927. 26 p.
4. TAPPI Standard 451 m-45. *Paper Trade J.* 121, No. 20: 31-32 (Nov. 15, 1945).

TABLE II.—RESULTS OBTAINED FROM THE NOMOGRAM BY FOUR OPERATORS IN CONTRAST TO NUMERICAL RESULTS

Calculated Value	Operator I		Operator II		Operator III		Operator IV	
		Error		Error		Error		Error
19.0	19.1	0.1	18.9	—0.1	18.8	—0.2	19.0	0.0
22.7	22.8	0.1	22.7	0.0	22.7	0.0	22.8	0.1
20.9	20.8	—0.1	20.8	—0.1	20.7	—0.2	20.6	—0.3
22.9	22.9	0.0	22.8	—0.1	22.8	—0.1	22.9	0.0
21.4	21.4	0.0	21.3	—0.1	21.4	0.0	21.3	—0.1
21.1	21.2	0.1	21.1	0.0	21.2	0.1	21.2	0.1
20.7	20.8	0.1	20.9	0.2	20.8	0.1	20.8	0.1
21.7	21.5	—0.2	21.6	—0.1	21.4	—0.3	21.5	—0.2
19.9	19.9	0.0	20.0	0.1	19.9	0.0	19.8	—0.1
21.1	21.0	—0.1	21.1	0.0	21.0	—0.1	21.1	0.0
20.9	20.8	—0.1	20.8	—0.1	20.8	—0.1	20.8	—0.1
21.3	21.3	0.0	21.2	—0.1	21.3	0.0	21.2	—0.1
23.0	22.9	—0.1	23.0	0.0	23.0	0.0	22.9	—0.1
24.5	24.4	—0.1	24.6	0.1	24.5	0.0	24.6	0.1
23.4	23.3	—0.1	23.4	0.0	23.5	0.1	23.5	0.1
Total error		—0.4		—0.3		—0.7		—0.5

[4] The significance of the variability between and within operators may be tested by the analysis of variance:

Variability	Freedom	Mean Square	F
Between operators	4	4.238	3.65*
Within operators	10	1.162	

where $0.05 > Pr > 0.01$—i.e., the variability between operators is significantly greater than within operators.

[5] For a Clark softness value found from a nomogram, the squared standard deviation is $\sigma^2 = \sigma_a^2 + \sigma_w^2 + \sigma_o^2$, where σ_a^2 is the variability ascribable to the nomogram and is calculated as the average value of the square of errors such as those in Table II, where σ_w^2 is the variability within an operator's performance and is the mean square on that score from the analysis of variance and where σ_o^2 is the variability between operators. The estimate of the latter quantity is, for the present problem,

$$\sigma_o^2 = (V_o - V_w)/3,$$

where V_o and V_w are mean squares from the analysis of variance.

Reproducible Gloss Standards

By DANIEL SMITH[1] and MARIE M. MAHONEY[1]

Any truly adequate instrumental study of the gloss of a surface, as determined by the angular reflectance characteristics of the surface, must be goniophotometric. It is generally understood and agreed that measurement of the variation in reflectance from a surface as a function of the angles of incidence and illumination provides data necessary for the specification of gloss. However, a major shortcoming of the goniophotometric method is the complete lack of psychophysical information which would indicate the manner in which gloss might be computed from the goniophotometric data.

Harrison *(1)* has pointed out that psychophysical correlations are urgently needed for the development of adequate instrumentation for the measurement and specification of gloss. He says further, "We are—compelled to make visual estimations the ultimate arbiter in deciding the best method of gloss measurement—".

That the presently available instrumental methods for gloss evaluation are far from satisfactory is well known. If a group of paper samples were sent to several laboratories for instrumental gloss evaluation, it would be surprising indeed if complete agreement were obtained. Not only would it be reasonable to expect the relative gloss among the samples of the group to be reported differently, but it would not be surprising to find that the laboratories did not agree on the order of increasing gloss of the samples as indicated by their measurements.

Discrepancies between the results of the various laboratories might be ascribed to differences in instrumentation; however, even among those having similar equipment some reported differences might be expected.

A survey of precisely this type has been made and reported. The report of the results of this survey *(2)*, which includes data from 21 laboratories, shows wide discrepancies. Three panels, one dull, one semiglossy, and one glossy, were measured by each laboratory. These panels were carefully prepared to maintain uniformity between the sets insofar as possible.

In this report of this survey, there is the statement that, "A cursory inspection of the data will show that there is a tremendous variation of numerical gloss readings among the laboratories represented." This statement is particularly significant in view of the fact that those laboratories which cooperated are probably the ones most seriously interested in the problems of gloss measurement.

At least a small measurable part of the variation between the results of these laboratories is due to actual variations between the sets of panels. This may be smaller than the instrumental factor, but it is certainly significant in view of the fact that this group also reports in a subsequent discussion a variation of three or four points, as measured on a single instrument by one laboratory for supposedly identical panels supplied by the Bureau of Standards.

As part of a program designed to study the psychological aspects of gloss for the primary purpose of making correlations with physical measurements, a technique has been developed for the preparation of reproducible replica gloss standards. These standards can be prepared at almost any gloss level. The number of replicas which can be prepared from any original standard is practically limitless, and they appear identical by visual and instrumental examination.

Original standards can be prepared at any desired gloss level by grinding blocks of carrara glass and then polishing back slowly until the proper gloss value is obtained. From these originals, thin plastic replicas can be made, and transferred to any other surface.

The authors have made many standard replicas by these techniques and have found the surface characteristics to be remarkably reproducible on the basis of goniophotometric measurements and photomicrographic examination. The replicas were found to differ very minutely from their originals, but several replicas made from any one original were practically identical. Some of the results of these studies are shown in the goniophotometric curves and photomicrographs of Fig 1.

An immediately useful application for reproducible gloss standards, which can be made available at several values throughout the whole gloss range, would be the calibration of gloss measuring instruments.

The most common standard reported for calibration of gloss meters is black carrara glass rated at 95 per mil. The greater the difference in gloss between this instrumental calibration point and the samples being measured, the greater will be the expected differences between the values obtained for several instruments. In the case of the three paint panels as measured by twelve different laboratories on the same type of commercial instrument at 60° and calibrated in the same manner, the maximum deviations from the average were ±3.5% for the high gloss panel, ±23.9% for the medium gloss

[1] Interchemical Corp., New York, N. Y.

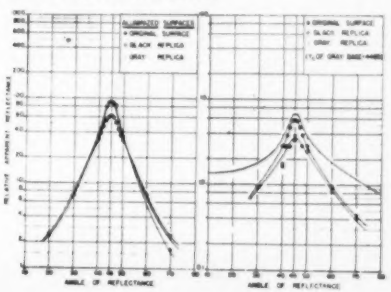


Fig. 1

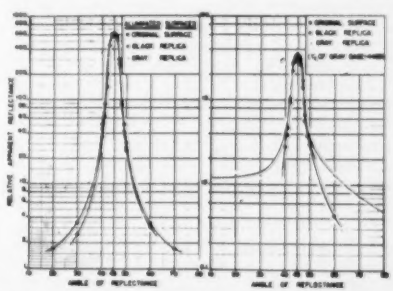
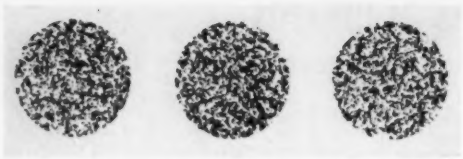
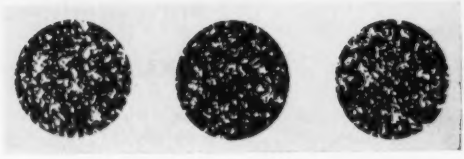


Fig. 2



Original B Black based replica B Gray based replica B

Fig. 3



Original E Black based replica E Gray based replica E

Fig. 4

panel, and ±52.8% for the low gloss panel.

TABLE I.—CALIBRATION STANDARD-BLACK CARRARA GLASS AT 95/MIL

Lab. No.	Panel 1	Dev.	Panel 2	Dev.	Panel 3	Dev.
1	80	1	35	3	5	2
2	82	1	55	17	10	3
3	82	1	35	3	6	1
4	80	1	31	7	5	2
5	87	6	57	19	16	9
6	76	5	33	5	3	4
7	84	3	36	2	6	1
8	74	7	20	18	0	7
9	80	1	34	4	6	1
10	80	1	50	12	5	2
11	86	5	45	7	16	9
12	80	1	26	12	4	3
	971	33	457	109	82	44
	av. = 81.*		av. = 38.*		av. = 7.*	
	av. dev. = 2.8		av. dev. = 9.1		av. dev. = 3.7	
	% dev. = ±3.5		% dev. = ±23.9		% dev. = ±52.8	

* Averages rounded off to the nearest whole number.

If these results are typical of instrumental measurements of gloss, and there is no reason to believe otherwise, it would be advantageous to calibrate the instruments with gloss standards which closely approximate the sample to be measured. The ideal situation would be that wherein the sample to be measured has precisely the same gloss as one of the available calibrating standards. In this case, regardless of individual small differences between instruments, all operators would report the same gloss value for the sample.

This multiple-standard calibration technique is similar in function to the surveying of land and the placement of appropriate identifying markers for simple, rapid, future reference. Once these positions have been very carefully designated, even if they have no significance other than their invariability with time, they may serve as reference points from which less elaborate subsequent measurements could be made in the surrounding area. These less elaborate measurements would be wholly inadequate without the fixed reference points, and the closer one measures to the reference points the more adequate becomes the simple method of measurement.

With the present method for the preparation of identical replica gloss standards, in large quantities, any group with common gloss problems could adopt and maintain several suitable calibration standards throughout the gloss range of interest. The direct advantage which can be gained by this method is shown graphically in Fig. 2, where A,B,C,D, and E represent levels of gloss at which standards could be made available. If calibration is made only at E (which might correspond to 95 per mil), the deviation between any instrument which might be designated as tentative standard and all other instruments might become progressively larger at lower gloss levels. If, however, several calibration points are maintained throughout the gloss range, the deviation between instruments must become zero at each of these points, by definition. The curves in Fig. 2 show the manner in which multiple standards keep the deviation small by making it zero at several points throughout the range of interest.

For samples which have a gloss value intermediate between those of two available standards, the best procedure would probably be to use both calibration points individually and average the results obtained for the sample. The error obtained when the instrument is calibrated with a standard having higher gloss than the sample will probably be in the reverse sense of the error obtained when the calibration standard is one of lower gloss than the sample. This too is indicated in Fig. 2 where the useful range of each of the calibration curves is indicated by the dark section.

While a procedure of multiple-standard calibration might solve an industrial gloss control problem as related to production, it cannot provide any useful information for a fundamental study of the phenomenon of gloss. Any fundamental study must be based on extensive data, such as that obtainable with a goniophotometer, rather than the single values obtainable with most of the commercially available instruments.

Perhaps most important are the psychological aspects of the gloss problem. Without any adequate understanding of this phase, no correlations can be made with physical measurements, and therefore no suitable instruments can be designed to correlate specifically with visual evaluations.

Until the necessary psychological background is obtained, a large part of the effort on gloss studies should be expended in that direction. Meanwhile, lacking an understanding of the basis for visual evaluation, they must nevertheless be accepted as "the ultimate arbitor." It would seem, then, that with a sufficient number of reproducible gloss standards to cover the range of interest, visual comparisons might be as satisfactory as present instrumental methods.

Literature Cited

1. Harrison, Definition and Measurement of Gloss, *Pulp*, page 136, 1945.
2. Official Digest, Federation of Paint and Varnish Production Clubs, 242, p. 447 (1945).

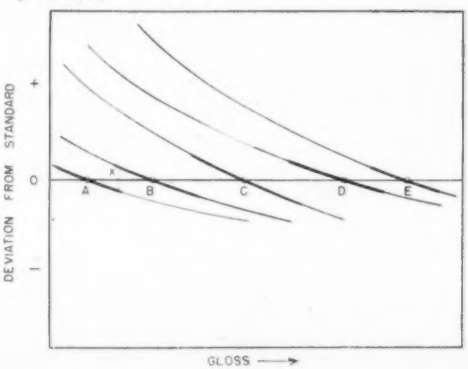


Fig. 5

Trends

Office of the PAPER TRADE JOURNAL,
Wednesday, January 12, 1949.

Predictions that business would take an immediate upswing with the new year were not sustained in the paper industry during the year's first week. Suppliers of pulp report buying dull. Trading in cottons, waste papers and other fibrous materials is said to be at a standstill. Neither is any improvement noted in consumer buying trends in paper and paperboard markets. Business is said to be at about prewar levels on regular lines. Heavy merchandising is successfully moving out of inventories subquality and *distress* items, often at special prices. Pipe lines are considered well filled, inventories bulging, and a healthy competitive market is again established with buyers demanding quality, service and price.

The return of business to prewar levels, however, does not presuppose the return of prewar conditions. New capacity, developed to meet wartime and postwar needs, now must be considered as a supplier to a buyers' market. In the paperboard field alone, this new capacity provided increased tonnage in 1947 of 788,600 tons, 849,720 in 1948, 641,950 planned for 1949, and 27,900 planned for 1950, a total added capacity of 2,308,170 since January 1947.

Indications are that the year will be a challenge to the industry, presenting opportunity to develop per capita demand by returning to the market those items long absent because of material shortages, to build export markets long overlooked, also to maintain domestic markets by keen merchandising, even while prices take a downward trend.

It is the opinion of the AP&PA's export committee that there are indefinite opportunities for the U.S. paper industry to establish firm foreign markets: new ones developed by increased industrialization abroad and by improved living standards, also those left vacant by removal of Japan and Germany as important factors in supply. It is expected that rehabilitation of Germany's pulp and paper industry will be slow, that all she can produce will be required for home consumption for many years. Japanese industry suffers from similar destruction, with the added handicap that part of the industry is now in Russian areas of control. Removal of these suppliers of some 600,000 tons from the world market leaves a deficit in supply at a time when improving living standards and increased literacy require expanded supplies.

North America's share of the world's paper and paperboard production had shifted from 55 percent in 1937 to 77.5 in 1947, with Europe moving from 39.5 percent to 18.5. Such figures point up the burden for supplying the world's requirements of paper and paperboard, also the opportunity for expanding export trade to the point where it may become vital to U.S. foreign trade, and assisting in maintaining the current high levels of production of U.S. paper and paperboard industry.

Information as to what and where these markets are is being provided by the AP&PA to its members in complete detail. Similar information also is being circulated through the Office of International Trade, U. S. Department of Commerce, Washington 25, D. C. December bulletin of OIT reports a market in Venezuela for corrugated containers, a market for facial tissue in the Union of South Africa, for glassine, cellophane and waxed paper in Australia.

Venezuela

"The only important manufacturer of corrugated boxes in Venezuela is in Caracas. Since this manufacturer is completing plans for expanding facilities, it is expected that domestic production capacity within the near future will be sufficient to satisfy the country's requirements.

"As production levels of manufacturing industries, such as food processing, toiletries and pharmaceuticals, continue to rise, the demand for various types of containers, including corrugated boxes, also is expected to increase. Although corrugated boxes of U. S. manufacture at present are competing effectively on both price and quality bases, it is probable that as domestic production costs decrease and quality improves, the volume of foreign purchases will decline."

Nicaragua—Paperboard

"If the price of imported paperboard should drop below the price of locally-manufactured board, imports will increase immediately because the imported type is of much better quality and has greater acceptance in the Nicaraguan market."

Union of South Africa

"Facial tissue is not produced in the Union of South Africa. However, considerable interest has been shown in the domestic converting of facial tissue; and there is a strong probability that some arrangement may be made in the near future whereby American namebrand facial tissues may be produced locally by either the U. S. manufacturer directly or by a South African manufacturer under license.

"Despite the fact that little advertising has been done to create a demand for facial tissue in the Union of South Africa, sales have been limited only by the supplies available. As the shortage of facial tissue in the U. S. has eased, releasing a greater quantity for export, sales to the Union have increased correspondingly. The newly-announced limitations on imports, however, preclude further development of the South African market at this time.

Australia—Glassine

"There is no production of glassine in Australia. All glassine is imported in bulk form and fabricated into bags, window-envelopes, fancy wrapping papers, and similar products. Most of it is used for packaging food, particularly nuts and candy. Outlook for the sale of U. S. glassine in Australia is unfavorable as long as the dollar situation remains stringent, although the product is highly regarded both for quality and price."

Foreign Exchange

Speaking on the great drawback to foreign trade before the National Paper Trade Association meeting in Chicago, October 28, 1947, E. W. Tinker of the AP&PA stated that "Admittedly the lack of foreign exchange at the present time and probably for some time to come will be a serious handicap in developing our export trade. Nevertheless we should keep this profitable field in mind in planning for the future. The base of our foreign trade is there, and it could be tied in very constructively with the industry's expansion program in a way that would make our world markets a permanent, ever-increasing outlet for our mills, and not an overflow outlet. I want to stress again what an important part our industry plays in international trade and how important international trade is to our industry. The imported products used in our industry run into hundreds of millions of dollars annually, and through these imports, we create a sizable amount of foreign exchange which is so vital in this long transition period for the world. I do believe that a well-established, permanent export trade is most constructive and beneficial, and should be given serious attention by our industry."

Indexes

The index of general business activity for the week ended January 1 dropped to 142.9 from 152.4 in the preceding week, compared with 153.3 in the corresponding week of 1948.

Index of paperboard production fell to 114.3 from 199.0 in the preceding week, compared with 190.4 in the corresponding week of 1948.

Comparative ratios of U.S. paper and paperboard production to mill capacity, as reported by AP&PA are:

	Jan. 1 1949	Dec. 25 1948	Jan. 3 1948	Jan. 4 1947	Jan. 5 1946
Paper**	71.7	‡74.3	100.3	96.3	89.1
Paperboard ...	46.0	87.0	78.0	85.0	75.0

** Indicates 1948 volume of 129,534 tons. Comparable week of 1947, 158,958 tons. ‡ Revised.

Paperboard Production (Tons)

	Jan. 1 1949	Dec. 25 1948	Jan. 3 1948	Month of Dec. (5 wks.)
Production ..	81,780	174,319	136,219	839,712
New Orders	116,925	139,128	187,093	831,264
Unfilled Orders ..	318,673	285,601	452,124	318,673

Percent of Activity, Current, 46%; Year 94%

Imports

Week Ending Jan. 8

NEW YORK

Newsprint

Montmorency Paper Co., Mount Sandra, Botwood, 2673 rolls.

Gilman Paper Co., Stockholm, Gothenburg, 337 rolls.

Madden Reeve Angel & Co., Inc., Mormacport, Kotka, 2110 rolls.

Gilman Paper Co., Gullmaren, Norrkoping, 339 rolls.

Printing Paper

H. Reeve Angel & Co., Inc., Parthia, Liverpool, 21 cs.

Winsor Newton, Inc., Fort Cadotte, London, 4 cs.

Gummed Paper

B. F.Drakenfeld & Co., Parthia, Liverpool, 73 cs.

Tracing Paper

Steiner Paper Corp., Red Jacket, Bremen, 6 cs. (transparent).

Wood Veneer Paper

T. N. Fairbanks, Pioneer Tide, Yokohama, 6 cs.

Sulphite Paper

Greenwich Paper Products Inc., Stockholm, Gothenburg, 167 rolls.

Nils Troedsson Inc., Stockholm, Gothenburg, 52 rolls.

Greenwich Paper Products Inc., Mormacport, Gothenburg, 124 rolls.

Wrapping Paper

S. B. Behrens, Stockholm, Gothenburg, 956 rolls (sulphite).

Tissue Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 23 cs.

Surface Coated Paper

Gevaert Co. of America, Burckel, Antwerp, 3 cs.

Serviettes

Abraham & Strauss, Parthia, Liverpool, 1 cs.
(———), Parthia, Liverpool, 18 crates.
(———), Fort Cadotte, London, 10 crates.

Decalcomanias

Sellers Transportation Co., Parthia, Liverpool, 1 cs. (ceramic transfers).

Paper Napkins

B. H. Heede Inc., Mormacport, Oslo, 20 bls., 56 ctns.

Photo Paper

American Express Co., Fort Cadotte, London, 160 drums.

Lep Transport Inc., Fort Cadotte, London, 96 drums.

Strawboard

Chase National Bank, Burckel, Antwerp, 9 bls.

Miscellaneous Paper

Lambert Coster, Mount Mansfield, Marseilles, 10 cs.

Rags, Baggings, Etc.

New England Waste Co., Stockholt, Santos, 139 bls. old jute bagging.

Midwest Waste Material Co., Ampac Los Angeles, Amsterdam, 216 bls. jute bagging.

H. Adlerstein, Ekefors, Genoa, 487 bls. cotton rags, 195 bls. dark cotton rags.

Tradesmans National Bank Trust Co., Marna Dan, Callao, 14 bls. cotton waste.

Chase National Bank, Parthia, Liverpool, 188 bls. wool rags, 74 bls. new thread waste.

American Express Co., Parthia, Liverpool, 16 bls. new wool rags, 49 bls. new waste, 13 bls. flocks.

(———), Parthia, Liverpool, 24 bls. new wool rags, 1 bls. thread waste.

E. J. Keller Co., Inc., Paraguay, Copenhagen, 82 bls. old bagging.

(———), Irisbank, Port Said, 67 bls. old white cotton rags.

A. W. Fenton, Inc., Alwaki, Antwerp, 30 bls. scrap bagging.

A. de Vries Trading Corp., Alwaki, Antwerp, 65 bls. rags.

E. J. Keller Co., Inc., Alwaki, Antwerp, 113 bls. old bagging.

New England Waste Co., Mount Mansfield, Bombay, 400 bls. cotton waste.

Brandwein Mazur Co., Mount Mansfield, Bombay, 400 bls. cotton waste.

Buffalo Batt & Felt Corp., Mount Mansfield, Bombay, 250 bls. cotton waste.

E. J. Keller Co., Inc., Mount Mansfield, Port Said, 960 bls. camouflage burlap strips.

National City Bank, Mount Mansfield, Genoa, 80 bls. old waste bagging.

A. de Vries Trading Corp., Mount Mansfield, Genoa, 112 bls. scrap bagging.

A. W. Fenton Inc., Mount Mansfield, Leghorn, 55 bls. scrap bagging.

Dixie Jute Bagging Corp., Lord Glentoran, Manchester, 240 bls. scrap bagging.

Castle & Overton, Inc., American Defender, Rotterdam, 92 bls. old rags.

Manufacturers Trust Co., Exeter, Genoa, 123 bls. old waste bagging.

A. W. Fenton, Inc., Jessie Maersk, Rotterdam, 64 bdls. scrap bagging.

Midwest Waste Material Co., Jessie Maersk, Antwerp, 2341 bls. scrap bagging.

E. J. Keller Co., Inc., Jessie Maersk, Antwerp, 77 bls. bagging.

Amicale Wool Service Corp., Jessie Maersk, Rouen, 58 bls. rags.

Old Rope

P. J. Schweitzer, Maidan, Calcutta, 485 bls. old hemp rope cuttings.

(———), Maidan, Calcutta, 117 bls. old hemp rope cuttings.

P. J. Schweitzer, City of Calcutta, Calcutta, 360 bls. old hemp rope cuttings.

(———), City of Calcutta, Calcutta, 80 bls. old hemp rope cuttings.

E. J. Keller Co., Inc., Paraguay, Copenhagen, 84 bls. old rope.

Casein

Wilbur Ellis Co., Bowrio, Buenos Aires, 2000 bags.

Gluestock

H. Hollander, Peter Ibsen, Recife, 91 bls.

Woodpulp

Pagel Horton & Co., Inc., Selma Thorden, Hernosand, 3000 bls. dry sulphite pulp.

Price & Pierce, Ltd., Stockholm, Gothenburg, 250 bls. wet sulphite pulp.

PHILADELPHIA

Jay Madden Corp., Mormacport, Rauma, 203 rolls wrapping paper.

Pulp Sales Corp., Mormacport, Rauma, 6115 bls. prime bleached sulphite pulp.

Madden Reeve Angel & Co., Inc., Mormacport, Kotka, 948 rolls newsprint.

NORFOLK

Montmorency Paper Co., Mount Sandra, Botwood, 2580 rolls newsprint.

Montmorency Paper Co., (Newport News), Mount Sandra, Botwood, 1658 rolls newsprint.

Montmorency Paper Co., (Petersburg, Va.), Mount Sandra, Botwood, 163 rolls newsprint.

Montmorency Paper Co., (Goldsboro, N. C.), Mount Sandra, Botwood, 178 rolls newsprint.

Montmorency Paper Co., (Rocky Mount, N. C.), Mount Sandra, Botwood, 63 rolls newsprint.

U. S. IMPORTS FOR WOODPULP

Preliminary Figures, Nov. 1948

	Country of Origin	Short Tons
Mechanically Ground		
Unbleached	Canada	17,913
	Newfoundland	48
	Sweden	112
	Finland	224
Screenings	Canada	392
Chemical		
Sulphite, Unbleached	Canada	37,943
	Sweden	5,433
	Finland	505
Screenings	Canada	564
Sulphite Bleached—Rayon and Special Chemical Grades	Canada	21,003
Sulphite Bleached—Other	Canada	17,447
	Sweden	1,143
	Norway	504
	Finland	452
Sulphate, Unbleached	Canada	13,779
	Sweden	1,927
	Finland	826
Sulphate, Bleached	Canada	21,562
	Sweden	377
Soda Pulp	Canada	2,739
Totals, Nov. 1948:	Canada	132,942
	Newfoundland	48
	Sweden	8,992
	Norway	504
	Finland	2,007
		144,493
Total, Nov. 1947		**186,926**

Debenture Issue Registered

GRAND RAPIDS, MICH.—The American Box Board Co., on January 6 registered with the Securities and Exchange Commission, $5,400,000 in 15-year convertible sinking fund debentures.

Production Up 250 Percent

OTTAWA—The St. Regis Paper Co. (Canada) established a new production mark in 1948 at a level over 250 percent above that of just a decade ago, a company spokesman discloses.

Two Hilton Men Upped

OTTAWA—W. R. Hilton has been named general manager of Hilton Bros. Ltd., and R. A. O'Dowda has been appointed sales manager of the corrugated division.

Holmes Succeeds Packard

LEE, MASS.—Frederick C. Holmes has been appointed chief engineer of Smith Paper, Inc., succeeding Roland A. Packard, retired.

Moves to New Haven

NEW HAVEN, CONN.—The Connecticut Container Corp, formerly on North Cherry street, Wallingford, has moved to 30 Chapel street, here.

Scherman Buys Pacific Co.

BERKELEY, CALIF.—The Pacific Paper Materials Co., has been sold to Joseph Scherman, 1511 Newell avenue, Walnut Creek, Calif.

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Prices

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

Delivered New York

STANDARD NEWS, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. mill, varying freight allowances, Zone 1.

KRAFT—per cwt., 40# base wgt.

No. 1 Wrapping	**7.75/**	**8.00**
Standard Wrapping Rolls	**7.80/**	**—**
Standard Wrapping Sheets	**7.50/**	**—**
Standard Bag	6.50/	—
Multiwall Bag, 40# and heavier, 24x36 (500 sheets)		
Southern	7.50/	7.75
Northern	7.75/	—

TISSUES—Per Ream 24x36 (480) 10/11 lbs.

Wh. No. 1 Frd.	**$1.84/**	**$2.00**
Wh. No. 1 M. G.	1.94/	2.00
Wh. No. 1½	1.65/	—
Wh. No. 2	1.50/	1.60
Kraft Anti-Tar	**1.65/**	**—**
Kraft Unbl.	1.85/	—
Shred. Wh. No. 1 per lb.	**.12½/**	**.18**

TOILET—Per Case of 100 rolls—1 M Sheets.

Unbleached 4½x4½	$7.20/	—
Bleached 4½x4½	8.00/	—
Bleached 4½x5	8.45/	8.75

Per Case of 50 rolls—1500 sheets

Unbleached 4½x4½	$5.70/	—

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½	$6.95/	—
Bleached 4½x4½	7.70/	—

PAPER TOWELS—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9½x9½	**$5.45**
Br. Sr. M'tif'd 10x12	**3.80**
Br. Jr. M'tif'd 9½x9½	**3.30**
Br. Jr. Sgl. fold 10x10¾	**3.35**

MANILA, per cwt.

No. 1 Jute Tag, sheets*	$15.05/	—
Reg. Jute M.F. Manila, sheets*	13.50/	15.50
No. 1 Manila Wrapping	8.75/	10.50
Printing Manila	10.00/	11.00

* Less usual allowance for rolls.

BOARDS, per ton—

Filled News	82.50/ —
Plain Chip	80.00/ —
Bldd. Mla. L-d. Chip*	105.00/
White Pat. coated*	120.00/
Kraft Linera 42 lb.	105.00/
Kraft Corr. .009	110.00/
Binders Boards	120.00/126.00

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

World Wood Pulp Markets at a Glance

First Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowances		On dock Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$80.00/$81.00	$80.00/$81.00			
Sideruna Pulping News		80.00/ 90.00			
Soda, Bleached	130.00/135.00	130.00/ —			
Sulphate, Bleached	136.00/145.00	147.50/150.00	$150.00/ —		
Sulphate, Unbl'd North'n	115.00/125.00	115.00/125.00	127.50/ —	127.50/ —	
Sulphate, Unbl'd South'n	105.00/115.00				
Sulphite, Bldd. (S'ftw'd)	126.00/135.00	135.00/ —	140.00/165.00	165.00/ —	140.00/165.00
Sulphite, Bldd. (H'dw'd)	125.00/145.00				
Sulphite, Unbleached	118.00/ —	125.00/ —	135.00/140.00	140.00/143.00	
Sulphite, Unbl'd (Glassine) (Varying frt. allowances)	120.00/ —	125.00/130.00			
Sulphite, Unbl'd (Glassine) (No freight allowed)		118.00/ —			

Waste Paper Market

Base Prices to Mills for Average Packings

F.O.B. Shipping Point (Per Ton)

	New York Jan. 7	Philadelphia	Boston Jan. 7	Chicago Dec. 1
No. 1 Hd. Wht. Env. Cuts	$95.00/100.00	$95.00/100.00	$—— /100.00	$100.00/ ——
No. 1 Hd. Wht. Shvs., unr'l'd	80.00/ 85.00	85.00/ 90.00	—— / 90.00	90.00/ ——
Super Soft Whit. Shvs.	80.00/ 85.00			
No. 1 Soft Wht. Shvs.	60.00/ 65.00	65.00/ 70.00	—— / 70.00	50.00/ 55.00
No. 1 Fly Leaf Shvs.	40.00/ ——		—— / 30.00	
No. 1 Gdwd. Fly Leaf Shvs.	25.00/ 35.00			
No. 1 Heavy Books & Mag.	17.00/ 19.00	20.00/ 22.00	—— / 18.00	28.00/ 30.00
Mixed Books	9.00/ 11.00		9.00/ ——	
No. 1 Wht. Ledger	40.00/ 45.00	50.00/ 55.00		30.00/ ——
Colored Ledger	35.00/ 40.00			
Manila Tab. Cards	50.00/ 55.00			
New Manila Env. Cuts	60.00/ 65.00	70.00/ 75.00	—— / 65.00	
Extra Manilas	20.00/ 25.00			
Mxd. Kraft, Bag Cuts	45.00/ 55.00			
Kraft Envelope Cuts	55.00/ 65.00		70.00/ 75.00	70.00/ ——
Trpl. Std. No. 1 Brn. Sft. Kraft	35.00/ 40.00		—— / 45.00	
New Kraft Corr. Cuts	35.00/ 40.00	35.00/ 40.00	—— / 40.00	
No. 1 Asstd. Old Kraft	30.00/ 35.00	26.00/ ——		20.00/ ——
Used Kraft Bags	30.00/ 35.00			
New Jute Corr. Cuts	10.00/ ——			
Old Corrugated	14.00/ 15.00	12.00/ 15.00	13.00/ 14.00	14.00/ ——
No. 1 News	12.00/ 14.00	10.00/ 11.00	11.00/ 12.00	—— / 15.00
No. 1 Mixed Papers	4.00/ 5.00	7.00/ 8.00	6.00/ ——	8.00/ ——
Box Board Cuts	6.00/ 7.00	8.00/ 10.00		
White Blank News	60.00/ 65.00	65.00/ 70.00	—— / 62.50	45.00/ ——
Overissue News	17.00/ 18.00	15.00/ 16.00	15.00/ ——	18.00/ ——
Sulphite Mill Wrappers	12.00/ 14.00			11.00/ ——

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

RAG CONTENT BONDS AND LEDGERS—

White, 16 lbs.
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$59.00	$54.55	$52.30
100% Rag	52.25	48.30	46.30
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

LEDGERS, per cwt.

100% Rag Ext. No. 1	$57.00	$52.65	$50.50
100% Rag	50.25	46.40	44.50
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

SULPHITE BONDS AND LEDGERS—

White, 16 lbs.
Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

LEDGERS, per cwt.—

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

WHITE BOOK, per cwt.—

Coated	Case	Ton
No. 1 Glossy	$20.90	$20.15
No. 2 Glossy	19.65	18.90
No. 3 Glossy	18.90	18.25
Machine Coated	16.65 to 17.15	16.05 to 16.35
Uncoated		
No. 1 Antique (Watermarked)	16.40	15.80
Offset	15.15 to 17.15	14.60 to 16.40
A Grade E. F.	15.40	14.85
A Grade S. C.	15.90	15.35
B Grade E. F.	15.15	14.55
B Grade S. C.	15.65	14.95

New Domestic Cotton Cuttings

(Prices to Mill, F.o.b. Ship. Pt.)

White Shirt	$10.00/	$10.50
Unbleached Muslin	10.50/	11.50
Light Silesias	7.75/	8.00
White Back Blue Overalls	6.25/	6.75
Blue Overalls	6.00/	6.50
Fancy Shirt	5.00/	5.50
Percales	6.25/	6.50
Light Prints	6.50/	6.75
No. 1 Washables	4.00/	4.50
Bleachable Khaki	5.50/	5.75
Unbleachable Khaki	5.00/	5.50
Cottonades	4.75/	5.25
Lt. Flannelettes	7.50/	8.00
Men's Corduroy	4.25/	4.50
Women's Corduroy	4.00/	4.25

Old Domestic Cotton Rags

(Prices to Mill, F.o.b. Ship. Pt.)

	Per 100 lbs.	
No. 1 Whites, Repacked	$5.00/	$5.50
No. 1 Whites, Miscellaneous	4.00/	4.50
No. 2 Whites, Repacked	3.00/	3.50
No. 2 Whites, Miscellaneous	2.50/	2.75
Blue Overalls	3.50/	4.00
Thirds and Blues, Repacked	2.25/	2.75
No. 1 Roofing Rags	1.40/	1.50
No. 2 Roofing Rags	1.25/	1.35
No. 3 Jute Bagging	1.15/	1.25
No. 4 Brussels & brd. Bck'd crpts.	1.25/	1.35
No. 5A Roofing Rags	1.25/	1.35

New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

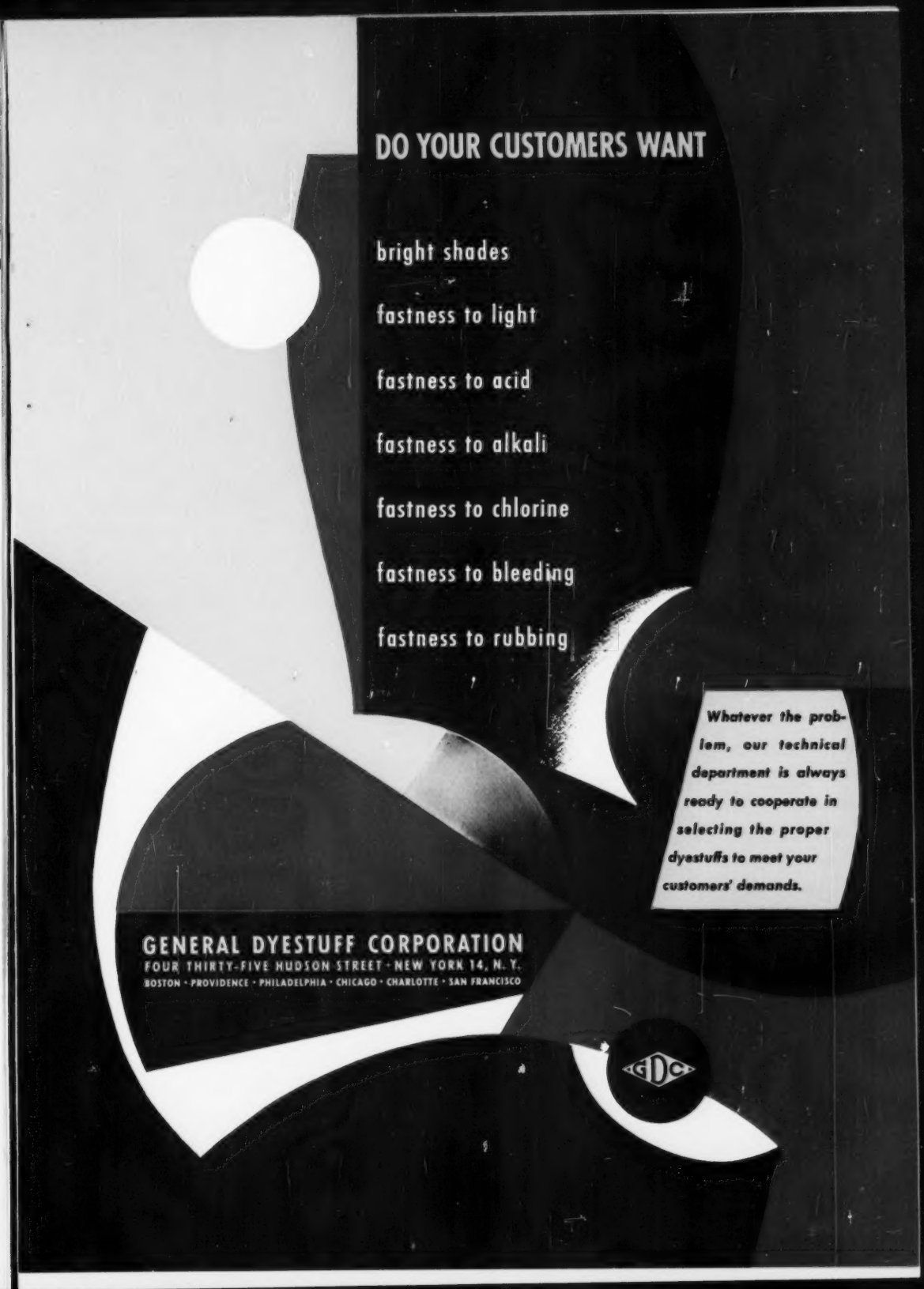
	Per 100 lbs.	
New Dark Cuttings	$4.75/	$5.00
New Mixed Cuttings	6.25/	6.50
Light Silesias	9.25/	9.50
Light Flannelettes	9.25/	9.50
New White Cuttings	12.00/	13.00
New Unbleached Cuttings	12.25/	13.00
Fancy Shirt Cuttings	6.50/	7.00
Light Prints	7.75/	8.00
Bleachable Khaki, No. 1	5.25/	5.00
Unbl. Khaki, No. 1	5.00/	5.25

Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.	
No. 1 White Cottons	— /	—
No. 2 White Cottons	— /	—
No. 3 White Cottons	3.25/	—
No. 4 White Cottons	3.00/	—

(Continued on page 37)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Prices

CONTINUED FROM PAGE 34

Extra Light Prints	prices
Old Light Prints	are
Med. Light Prints	nominal
Dutch Blue Cottons	
Checks and Blues	
Linsey Garments	
Dark Cottons, European	
Dark Cottons, Egyptian	
Old Shopperies	
New Shopperies	

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$8.00/ $8.50
Domestic Gunny, No. 1	7.50/ 8.50
Heavy Wool Tares	7.50/ 7.75
No. 1 Scrap Bagging	6.60/ 6.75
Roofing Bagging	.80/ .95
Foreign Manila Rope	5.25/ 5.50
Domestic Manila Rope	5.65/ 5.75
Jute Strings	6.75/ 7.00
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.30/ 1.50

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32¾/ .34½
Tube Rope	.33¾/ .35½
Wrapping	.36 / .38¾
Cotton	.58 / .60
Polished Cotton	.55 / —

(Hard Fiber)

Mex. Sisal	.21 / .27
Manila (Reprocessed)	.31 / .35

(American Hemp)

Polished Hemp	.46½/ .48
Unpolished	.35 / .37¼

PHILADELPHIA

Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

White Shirt	.10½/ .11
Light Silesias	.07½/ .08
Black Silesias, soft	.05½/ .06
Unbleached Muslin	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Washable Shredding	.02¾/ .03¼
Fancy Percales	.06¾/ .07¼
Unbleachable Khaki	.05½/ .06½
Bleachable Khaki	.06¼/ .06¾
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

White No. 1—Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.50 / 2.75
Repacked	3.00 / 3.25
Domestic No. 1 Roofing Stock	1.55 / 1.60
Domestic No. 2 Roofing Stock	1.45 / 1.50
Roofing Bagging	1.35 / 1.40
Old Manila Rope	— / 5.50

Bagging

(F.o.b. Eastern Shipping Point)

Foreign Gunny No. 1	nominal
Domestic Gunny No. 1	.07½/ .07¾
Sisal Strings No. 1	.04½/ .05
Sisal Strings No. 2	.03½/ .04
Sisal Jute	.02¼/ .03
No. 1 Scrap	.06½/ .07
No. 2 Scrap	.03 / .03½

BOSTON

Bagging

(F.o.b. Boston)

	(Per 100 lbs.)
Foreign Gunny	nominal
Domestic Gunny	9.00 / —
Domestic No. 1 Old Rope	6.00 / 6.50
Foreign No. 1 Old Rope	5.75 / 6.00
Mixed Strings	1.35 / —
Transmission Rope—	
Domestic	3.00 / —
Jute Carpet Threads	— / 4.00
Bleachery Burlap	— / 9.00
Scrap Burlap—	
Foreign	6.75 / 7.00
Domestic	8.25 / 8.50
South America	8.25 / 8.50
Austr. Wool Pouches	8.00 / —
New Zealand Wool Pouches	8.00 / —
New Burlap Cuttings	8.50 / —
Heavy Baling Bagging	8.00 / 8.50
Paper Mill Bagging	8.00 / —
No. 1 Roofing Bagging	— / 1.40

Domestic Rags (New)

(F.o.b. Boston)

	(Per 100 lbs.)
New Light Prints	nominal
Fancy Percales	7.00 / —
White No. 1 Shirt	11.00 / 11.25
Light Flannelettes	8.00 / —
Canton Flannels, Bleached	10.00 / 10.25
Underwear Cutters, Bleached	10.50 / 11.00
Underwear Cutters, Unbleached	10.50 / 11.00
Blue Overalls	7.50 / 7.75
Soft Unbleached	11.00 / 11.50
Blue Cheviots	7.50 / 7.75
Fancy Shirt	6.00 / —
Washable	6.00 / —
Khaki Cuttings	6.00 / —
Men's Corduroy	4.50 / —
Khaki Canvas	— / 6.00
B. V. D. Cuttings	11.00 / —

Domestic Rags (Old)

(F.o.b. Boston)

	Per 100 lbs.
No. 1 Whites, Repacked	$4.25 /$4.50
No. 1 Whites, Miscellaneous	3.00 / 3.75
Twos and Blues, Repacked	2.50 / 3.00
Old Blue Overalls	3.00 / 3.25
No. 1 Roofing Stock	— / 1.45
No. 2 Roofing Stock	— / 1.35
No. 3 Roofing Stock	— / .90
No. 4 Roofing Stock	— / .90
No. 5, Quality A	— / 1.20
Old Manila Rope	6.00 / —

Markets

Blanc Fixe

Demand steady. Dry direct process supply good. Currently quoted at $85.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld. By-product supply somewhat restricted. Quoted at $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Prices unchanged. Demand continues good. Supply adequate. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l.,works.

Casein

Buying dull as Argentine price rises. Expect bigger U. S. supply and much lower prices in 1949 as CCC discontinues purchases of dry milk solids. Current prices on processed acid precipitated casein at 28 to 32 cents per pound for domestic grades and 26 to 27½ cents for imported grades, f.o.b. shipping point.

Caustic Soda

Liquid types in good supply. Flaked and solid improving but still tight. Solid caustic is reported at $3.10/$3.20 per cwt. flaked and ground is quoted at $3.50 per cwt., in 400 pound drums, $4 to $4.45 per cwt. in 100 pound drums —car lots at works; liquid 50 percent in tank cars at $2.50 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt., at works.

China Clay

Supply ample. Demand steady. Domestic filler quoted at $10 to $12.50 per ton, car lots, f.o.b. mines. Coating clay is $15 to $25. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Strong and sustained demand. Shortage of tankcars and multi-unit containers hampers delivery. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-tank cars, f.o.b., works.

Rosin

Trading dull as consumers proceed cautiously. Export activity disappointing. Gum rosin in drums per 100 pounds net in car lots, f.o.b., Savannah; B, $6.65; G, H, I, K, $7.65. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

Rosin Size

Demand continues strong. Supply good. Price eases 15c. Seventy percent gum and pale wood grades, tank cars, $6.15 to $6.25, f.o.b. southern shipping point.

Salt Cake

Supply good. More efficient use has cut industry needs. Prices steady. Domestic salt cake quoted at $27.00, f.o.b. shipping point, freight allowed to destination.

Soda Ash

Delivery good. Increased production and eased demand from other industries makes supply condition favorable. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate

Production good. Demand eased by better supply of other alkalis. Reported as $1.95 per cwt. paper bags, carload lots.

Starch, Corn

Demand fair; prices advance 10 cents with corn market. Supply ample. Pearl grade quoted at $4.92 per 100 pounds; powdered starch at $5.03 per 100 pounds; car lots, f.o.b. Chicago.

Starch, Potato

Supply ample. Demand improving. Rumors of export inquiry stiffen market. High grade quoted at $4.75-$5.00 cwt., f.o.b. Idaho; $5.00/$5.25 f.o.b. Maine; Pearl grade, $4.90/$5.05 cwt. f.o.b. Maine.

Sulphate of Alumina

Supply good. Price steady. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Export demand appreciably increased. Supply good. Annual contracts are quoted at $18 per long ton, f.o.b. mines; $19.50, f.o.b. vessels, Gulf ports. Export price f.o.b. Gulf ports is $22.00 per long ton.

Talc

Demand continues in excess of supply. Improvement seen by early 1949. Prices steady. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Tapioca Flour

Market firms. Slight increase noted in demand. High grades in fair supply. Superior high range from $10.25/$11.50 cwt.; high grades $9.25 cwt., on dock Atlantic and Gulf ports; medium grades range from $6.00/$7.50 cwt. on dock, N. Y. Coarse pearl grades, $5.00/$5.50 cwt. on dock N. Y. Medium and low grades in adequate supply.

Titanium Dioxide

Prices advance 1½ cents, actual freight allowed. Supply of paper grades continues unequal to demand. Shipments on allocation. Improvement in supply delayed to 1951. Anastase 19½c pound carload lots, 20c l.c.l., rutile, 21½c pound carload lots, 22½c l.c.l.; 50-pound bags, f.o.b. plant, actual freight allowed.

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

•

KIDDER, PEABODY & CO.

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Albany Newport
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Lowell Scranton
Minneapolis Springfield
New Bedford Wilkes-Barre

New York Teletype NY 1-193

Financial Record

Preferred Stocks	Per Share Calendar Year 1947	Earnings 12 Mos. to Approx. 9/30/48	Indic. Annual Divid. Rate	Jan.11 Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$38.64*	$43.53*i	$3.75	
Armstrong Cork Co. $4.00 Cum. Conv.	38.64*	43.53*i	4.00	110½
Celotex Corp. 5% Cum.	24.25c	26.25g	1.00	18¾
Champion Paper & Fibre $4.50 Cum.	65.90f	43.82j	4.50	94½
Container Corp. of Amer. 4% Cum.	102.74	98.49	4.00	96⅝
Crown Zellerbach $4.20 Cum.	56.40f	59.10k	4.20	
Crown Zellerbach $4.00 Cum. Conv. 2nd	211.39f	178.01k	4.00	
Dixie Cup Co. $2.50 Cum. Conv. Cla	9.16	9.61	2.50	49¾
Flintkote Co. $4 Cum.	81.91	87.68	4.00	99¼
Robert Gair Co., Inc. 6% Cum.	18.01	15.97	1.20	
International Paper Co. $4 Cum.	236.51	242.27	4.00	
Johns-Manville $3.50 Cum.	128.81	175.15	3.50	110¾
Kimberly Clark Corp. 4½% Cum.	70.03	82.79	4.50	
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88	114.55	4.00	
MacAndrews & Forbes 6% Cum.	62.20	59.89	6.00	132½
Mead Corp. 4¼% Cum.	81.56	80.43	4.25	
Mead Corp. 4% Cum. Conv. 2nd	53.34	51.89	2.00	
Paraffine Cos. Inc. 4% Cum. Conv.	152.76a	158.96	4.00	
Rayonier Inc. $2 Cum.	13.58	16.09	2.00	33½
St. Regis Paper Co. 4.40% 1st A	76.93	85.00	4.40	
Scott Paper Co. $3.40 Cum.	43.95	54.31	3.40	
U. S. Gypsum Co. 7% Cum.	211.34	300.59	7.00	
United Wallpaper Inc. 4% Cum. Conv.	(d)1.35a	(d)6.28	2.00	
West Virginia Pulp & Paper 4½% Cum.	75.75c	78.49g	4.50	
Common Stocks				
APW Products Co.	$1.24	$1.32	$0.25	
American Writing Paper Corp.	1.61	0.02	0.25	
Armstrong Cork Co.	6.41	7.17i	3.00	48¼
Celotex Corp.	6.39c	7.15g	2.00	26⅛
Certain-Teed Prods. Corp.	3.75	3.99	1.15	12⅜
Champion Paper & Fibre	5.57f	3.81j	2.00	23⅛
Congoleum Nairn Co.	4.55	5.12i	2.25	29
Container Corp. of America	10.09	9.54	4.50	36
Crown Zellerbach	6.81f	6.70k	2.00	26¼
Dixie Cup Co.	5.87	6.26	1.00	27⅞
Eastern Corp.	5.02	6.51	1.00	15⅞
Flintkote Co.	6.27	6.28	3.00	30¼
Robert Gair Co., Inc.	2.83	2.49	0.70	7¼
Great Northern Paper Co.	4.56	4.55	2.80	36½
International Paper Co.	15.02	15.39	5.00	50¾
Johns-Manville Corp.	3.17	4.28	2.00	40⅝
Kimberly-Clark Corp.	4.29	5.16	1.65	25⅜
MacAndrews & Forbes Co.	3.68	3.53	2.50	36
Marathon Corp.	4.11e	....	1.40	21½
Mead Corp.	7.33	7.11	2.00	16¼
National Container Corp.	4.13	2.86	1.20	9½
Paraffine Cos. Inc.	2.40a	2.50	1.20	
Rayonier, Inc.	7.30	8.88	2.00	28¾
Ruberoid Co.	10.88	12.90	3.25	54½
St. Regis Paper Co.	2.66	2.86	0.80	9
Scott Paper Co.	3.02	3.79	2.50	46⅞
Sutherland Paper Co.	6.87	6.43	2.50	35⅝
Taggart Corp.	1.29		0.60	
Union Bag & Paper Corp.	7.93	8.13	4.00	31½
United Board & Carton	4.95b	2.04h	1.25	7⅝
U. S. Gypsum Co.	10.00	14.36	6.00	103½
United Wallpaper	(d)0.11a	(d)0.27	——	3⅞
West Virginia Pulp & Paper	11.40c	11.56g	4.00	40⅝

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Year ended 10/31/48
(f) Year ended 4/30/48
(g) 12 months to approximately 7/31/48
(h) 12 months to 11/13/48
(i) 12 months to approximately 6/30/48
(j) 5 months to 9/30/48
(k) 12 months to approximately 10/30/48
(*) Pro forma

Canadian Securities

OTTAWA—The Prices Branch of the Canadian Government reports that security prices of common stock in the pulp and paper classification increased to 267.6 in November, 1948, compared with 266.9 in October, for a gain of 0.7, with these indexes based on 1935-1939 being equal to 100, showing principal price changes in increases for Powell River and Moore Corp., but decreases in this period for Abitibi and Howard Smith stocks.

The Bettmann Archive

In its early beginnings, nearly a half-century ago, Niagara Alkali set itself two big tasks to lick . . . to pioneer in developing several important new electro-chemical products . . . and to perfect new methods and techniques for keeping Niagara products and service at the highest peak of quality and efficiency.

Rely on Niagara for high standards of quality and experienced technical assistance in the use of Niagara Caustic Soda, Caustic Potash, Carbonate of Potash, EBG Liquid Chlorine, Paradichlorobenzene and Niagathal (Tetrachloro Phthalic Anhydride).

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Australian Notes

As from January 1, 1949, the Federal Government will abandon newsprint rationing, and the newsprint pool will therefore be disbanded. Announcing this, the Prime Minister (Mr. Chifley) says that newsprint and other kinds of printing paper of non-dollar origin are becoming available in increasing quantities . . . "therefore the circumstances in which the pool was established no longer exist." But he adds that newsprint will continue to be subject to Customs (import licensing) restrictions. "It will be necessary, because of the dollar exchange difficulty, to continue to ration heavily imports of dollar newsprint. . . . Neither the Government nor the Department of Trade and Customs can assist in procuring newsprint or other printing paper . . . but they will, however, provide facilities such as the issue of import licenses, within the limits possible."

* * *

The Cumberland Paper Board Mills, Ltd., intends to go into voluntary liquidation following a merger with the Australasian Paper & Pulp Co., Ltd. Accounts of both companies, recently issued, show that Australasian Paper & Pulp make a consolidated profit of £174,041 for the year, an increase of £20,564 on the previous 12 months. This after excluding outside shareholders' interest of £107,040. Depreciation for the year was £30,332 higher at £388,573. Dividend is steady at 6 percent. Cumberland Paper Board Mills reports a net profit of £36,059, which is £155 lower than the profit for the previous year. Ordinary dividend remains unchanged at six percent.

At the moment the Australasian Paper & Pulp Co., Ltd., is offering its employes 100,000 ordinary shares of £1 each at a premium of five shillings. The company is offering to pay for the shares, and will accept repayment from employes at three pence (about 4c. at current rate of exchange) a week, free of interest. Maximum number of shares which can be applied is for 500.

* * *

Directors of Australian Newsprint Mills, Ltd., in their annual report, state that their Tasmanian mill has been turning out a volume of newsprint well above the rated capacity of the paper machine. The total tonnage produced during the year was 31,335. All major items of oversea equipment, they add, are expected to be delivered on schedule for the expansion of the mill, and good progress has been made to date with building at Boyer and with road construction in the Florentine Valley. After providing £46,433 for taxation, profit for the year was £113,409, compared with the £113,270 of the previous 12 months. Ordinary dividend is at the rate of five percent.

At the inaugural meeting of the newly constructed Whatakane Board Mills in Wellington, N. Z., a dividend of five percent on both preference and ordinary shares was declared. A poll to fill vacant directorships resulted in the election of S. Robinson (Auckland) and R. Hansen (Sydney).

* * *

In New Zealand an increase of £4 12s. 9d. per ton in the price of wrapping paper has been granted to local mills, covering paper in rolls and flat. Shipments of imported paper from Sweden are due to land shortly, and coming in under the new exchange rate they should, now that the price of the local line has been increased, land at a competitive price.

* * *

What is believed to be the first shipment of newsprint from Great Britain to reach Australia since 1939 recently arrived in the steamer *Clan Macrae*. Total consignment was of about 700 tons, consigned from Liverpool to Melbourne and Sydney.

* * *

Registered recently: William H. Sellen, Pty., Ltd., capital £10,000; manufacturer of cartons and envelopes. Office, Sydney. . . . Blue Printing Pty., Ltd., manufacturer of sensitized paper. Factory, Port Melbourne.

PAUL ANTHONY

—new manager of the Eastern sales region of the Marathon Corp., with headquarters in New York City. . . . Mr. Anthony joined Marathon in 1924. . . . He succeeds R. A. Nash, who has resigned, effective January 15, to become vice-president of sales of the Sorg Paper Co., Middletown, Ohio.

Nettl Paper Converters, Ltd., is offering for subscription 50,000 ordinary shares of ten shillings each. This company has been formed with a nominal capital of £100,000 in 10s. shares to purchase the interest of A. Nettl in the Legy Co., West Melbourne, of which Mr. Nettl is manager and holds a half interest. The company proposes to manufacture and deal in paper, corrugated paper, gummed paper and corrugated boards.

* * *

J. Fielding & Co., Ltd., cardboard box maker of Sydney, reports a net profit for the year ended September 30, 1948, of £82,568, compared with the previous year's £77,972, after allowing £28,871 (previous year, £13,301) for depreciation. Dividend of 15 percent, plus bonus of 7½ percent is being paid (unchanged). Directors report that the demand for the company's products exceeded the supply of raw materials, and factory output was below requirements.

* * *

Bowater & Lloyds Sales, Ltd., paper maker and merchant firm of Sydney, will in the future be known as the Bowater Paper Co., Ltd.

* * *

Paper Products Pty., Ltd., incorporated in Sydney, has recently registered in Western Australia with a capital of £500,000 in £1 shares.

* * *

S. Kessell, managing director of Australian Newsprint Mills, Ltd., stating recently that Swedish sawmills were nowadays merely adjuncts to huge factories making pulp, paper, etc., said that similar planning was now being done throughout Australia.

McFadden to H. Q.

NEW YORK—Joseph A. McFadden, assistant vice-president of the Chemical Bank & Trust Co., who has been following the pulp and paper industry for his bank, has been transferred from the office at 46th street and Madison avenue to the head office at 165 Broadway. Mr. McFadden will assume additional responsibilities as a loan officer and will continue his interest in the Pulp and Paper Industry.

Dr. Gergold Aiding Canada

OTTAWA—The Agriculture Department of the Canadian Government has retained Dr. Gernor Gergold, virus specialist of the Kaiser Wilhelm Institute for Biochemistry at Tuebingen, Germany, to help in its battle against scourges which endanger Canada's forests. Dr. Bergold now is in the Sault Ste. Marie area launching a forestry research project.

Swedish-British Pact

STOCKHOLM — Agreement has been reached with the British Paper Control that Sweden's chemical pulp exports to Great Britain in 1949 shall be fixed at 300,000 to 325,000 tons, according to circles close to the Board of Trade.

Mechanical pulp deliveries are fixed at 150,000 tons and viscose pulp at 80,000 to 85,000 tons.

These LIFE TESTS *prove:*

THE VALUE OF MONEL-CLAD STEEL HERE

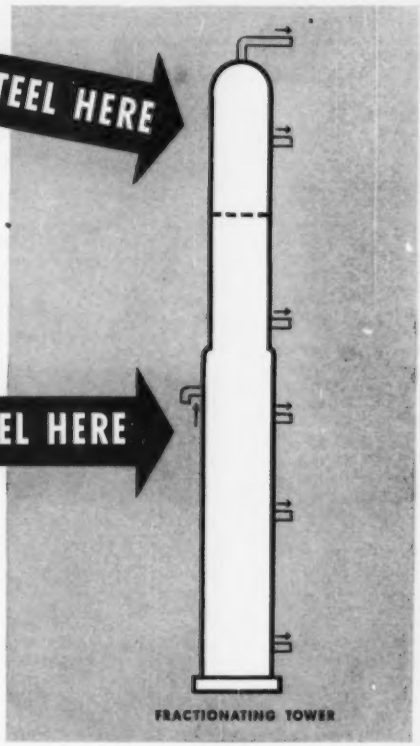
PLANT CORROSION TESTS* IN TOP OF CRUDE TOPPING TOWER	
Material	**Corrosion rate, inch penetration per year**
Monel	0.003
Nickel	0.006†
Inconel	0.017†
18-8 Mo stainless steel (type 316)	0.053†
18-8 stainless steel (type 304)	Completely corroded away

*In straight run gasoline vapor in top of tower. Average temperature 250° F. Duration of test, 60 days. West Texas crude.
†These materials suffered pitting attack.

AND OF STAINLESS-CLAD STEEL HERE

PLANT CORROSION TESTS* IN BOTTOM OF CRUDE TOPPING TOWER	
Material	**Corrosion rate, inch penetration per year**
Monel	0.17
Nickel	Completely corroded away
Inconel	0.0002
18-8 Mo stainless steel (type 316)	Less than 0.0001
13 percent Cr steel (type 410)	0.0014

*At bottom of crude fractionating tower, approximately 5" above tray No. 38 near the overflow side. Average temperature 700° F. Duration of test 120 days. East Texas crude. 88 gal. per hr. Na_2CO_3 injected into crude feed.



Consider, first, the materials promising long life on your equipment; tests like these tell you that. Then weigh comparative cost figures, fabricating characteristics and any other factors involved. You find a safe and economical answer—the Lukens Clad Steel best meeting your requirements.

Life of equipment is lengthened many times, reducing depreciation to a fraction. Maintenance costs are held to a minimum. Equipment is kept in service without interruption. Safe operation is assured. Think what all these advantages add up to!

Lukens makes the most complete range of clad steels available from any source: Nickel-Clad, Stainless-Clad, Inconel-Clad and Monel-Clad Steels, in plates as wide as 178 inches or to over 3 inches thick. Each has a uniform cladding of the corrosion-resistant metal permanently bonded to the steel backing plate. All are available in the extra-smooth sodium hydride finish.

Bulletins 255 and 338 describe these Lukens Clad Steels. For copies, write Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.

LUKENS
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STEELS

Two 16mm Kodachrome motion pictures—"The Manufacture of Lukens Clad Steels" (silent) and "Solving Corrosion Problems" (with sound)—will be loaned to you. Write for booking date.

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

Where and How Interim Freight Boosts Apply

See Map on Opposite Page

Freight rates will be increased four percent to six percent on shipments traveling by rail. The permission to "up" the charges was given by the Interstate Commerce Commission after consideration of the carriers' request for an immediate eight percent interim increase.

This new advance will increase the transportation cost of every article produced by the paper industry. A distinction is made between lumber and pulpwood, for while both are "products of the forests" and some tariffs give each the same rating, yet in this increase, for lumber and articles taking lumber rates the additional charge is to be four cents per 100 pounds, while in the case of pulpwood the increase is four percent to six percent.

The new freight costs mean that rail shipments moving in and between the East and South will be increased six percent; four percent in the West; and five percent on traffic moving between territories. This also applies to international freight to and from Canada and Mexico.

The ICC also gave permission to freight forwarders and water carriers using rails in joint hauls to raise rates. Those shippers whose lading moved on the cheaper rates of water-rail or motor-rail will have the same increases applied.

Special services such as switching, crane, pick-up and delivery, reconsignment, stop-offs to complete load or partly unload in transit, lading shipped in truck or trailer on flat cars, storage, lighterage are a few of the many to be increased.

The additional transit cost will be applied as a percentage increase in the amount of the total freight charges as shown on the freight bill, exclusive of the three percent Federal transportation tax.

While the rails will put the increases into effect immediately, this is not the end of the story. Express charges on less-than-carload will be increased early in February on shipments in the East and South. Permission by the ICC was given on the same day (December 30, 1948) to the Railway Express Agency.

Rates in the West were higher than the section east of the Mississippi River and there is now to be a uniform or single rate scale applied over the country.

The higher rates in the West will be in effect nationally.

Camel's Nose in Tent

WASHINGTON—The Forest Service in the U. S. Department of Agriculture has requested its Regional Foresters to put a group of camp, picnic and winter sports areas on a charge basis at the beginning of the 1949 vacation season, it was disclosed on January 10.

This will mark the first time, except in minor instances, that the Service has departed from its traditional custom of providing free public recreation in its management of the National Forests. The proposed charges will be for the use of facilities and not for entrance to National Forests.

The schedule of charges follows:

Camping: Fifty cents per day per car party or not more than six persons or $3.00 per week. For parties of more than six persons an additional 10 cents per day per person for all above six, but no charge for minors under 12 years.

Picnicking: Twenty-five cents to 50 cents per car party of not more than six per day. Five to 10 cents extra for each person above six but no charge for minors under 12. Group picnic units and amphitheaters may be handled at a flat rate if desirable, the rates to be set by the Regional Forester.

As in the past, additional charges will be made for providing split fire wood, lockers and checking arrangements at bathhouses.

A forerunner of the plan was in operation last season in Region 5 (California) where three heavy used campgrounds were put under permit to private individuals and a fourth to Eldorado County. The permits were temporary and expired at the end of 1948.

Obituary

Hugh Miles Lewis, vice-president and general manager of the Sorg Pulp Co., Ltd., Port Melon, B. C., died at his home on December 28. Mr. Lewis began his career as an engineer and draughtsman for the Canadian Northern Railway in 1910. Following five years with the Canadian Army overseas in World War I, he joined Provincial Paper Ltd. at Port Arthur, Ontario, where he remained as chief engineer until 1929, when he went to Pacific Mills, Ltd., Ocean Falls, B. C. In 1941, Mr. Lewis left Pacific Mills to become general manager of the Burrard (Vancouver) Dry Dock Co., Ltd. On completion of the War Contracts in 1944, he was engaged by the Sorg Pulp Co., Ltd. as vice-president and general manager, the position he held until his death. Mr. Lewis was a member of the Engineering Institute of Canada, Vancouver Club, Terminal City Club and Shaughnessy Golf Club. Surviving are his widow; a daughter, Nancy.

Leo W. Knapp, 58, a sales engineer associated with Oliver United Filters, Inc., New York City, died on December 18 as a result of injuries incurred in an automobile while enroute to a coal mine in Pennsylvania.

Theodore W. Robinson, Sr., one of the founders of Ditto, Inc., Chicago, and for many years president and board chairman, died on December 30.

Floods Halt Mills

HOUSATONIC, MASS.—The flash flood which hit Western Massachusetts rivers over the New Year's holiday forced the Rising Paper Co., mill and the Monument Mills, here to close down when water flooded machinery and motors in the basements of the buildings. The Bay State mill of Crane & Co., in Dalton also was hard hit and the mills of the Smith Paper Co., in Lee and the Hurlbut Paper Co., in South Lee suffered heavily in the flood. All of the plants were idle for approximately a week.

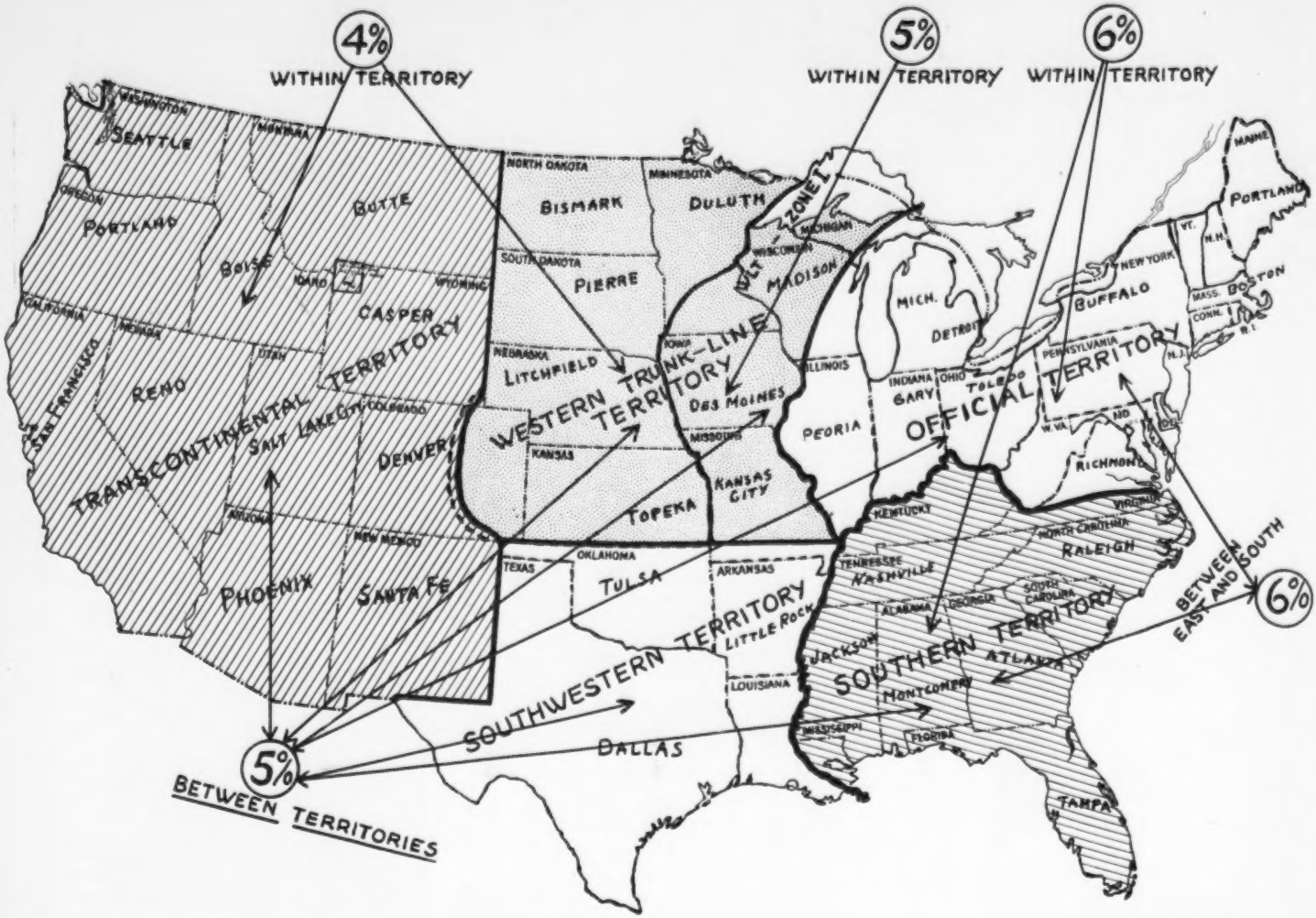
Flood damage to the Rising Paper Co., plant will run into the hundreds of thousands of dollars, company officials estimated on January 7 after the coal trestle at the rear of the plant collapsed under the pounding it had taken from the raging Housatonic River. They expressed fear for the high smoke stack and the boiler room, the base of the latter having been undermined by the raging waters.

A carload of coal crashed when the trestle tumbled over, with the freight car landing on the west wall of the raceway, damaging a 50-foot section of the wall.

Melvin L. Kemp said the company could only estimate the loss as being "great." He predicted that operations at the plant—where 200 workers had been out of work for a week because of flood damage—will be at a standstill for some time. The raceway wall, Mr. Kemp said, must be rebuilt. This alone, he estimated, may run to more than $100,000.

Canadian Car Loadings

OTTAWA—Car loadings on the Canadian railways of woodpulp and paper increased to 221,671 cars from the first week of 1948 until the week ending December 25 compared with 214,783 cars in the similar period of the preceding year, with the Eastern Division accounting for 191,681 cars as against 186,579 cars in the previous year and the Western Division for 29,990 cars compared with 28,204 cars, according to the latest report of the Canadian Government.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WITHIN TERRITORY
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SEATTLE
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SAN FRANCISCO
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SALT LAKE CITY
DENVER
PHOENIX
SANTA FE
BISMARK
DULUTH
PIERRE
MADISON
WESTERN TRUNK-LINE TERRITORY
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LITTLE ROCK
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DALLAS
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BETWEEN TERRITORIES
DETROIT
BUFFALO
TOLEDO
GARY
OFFICIAL TERRITORY
RICHMOND
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JACKSON
MONTGOMERY
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TAMPA
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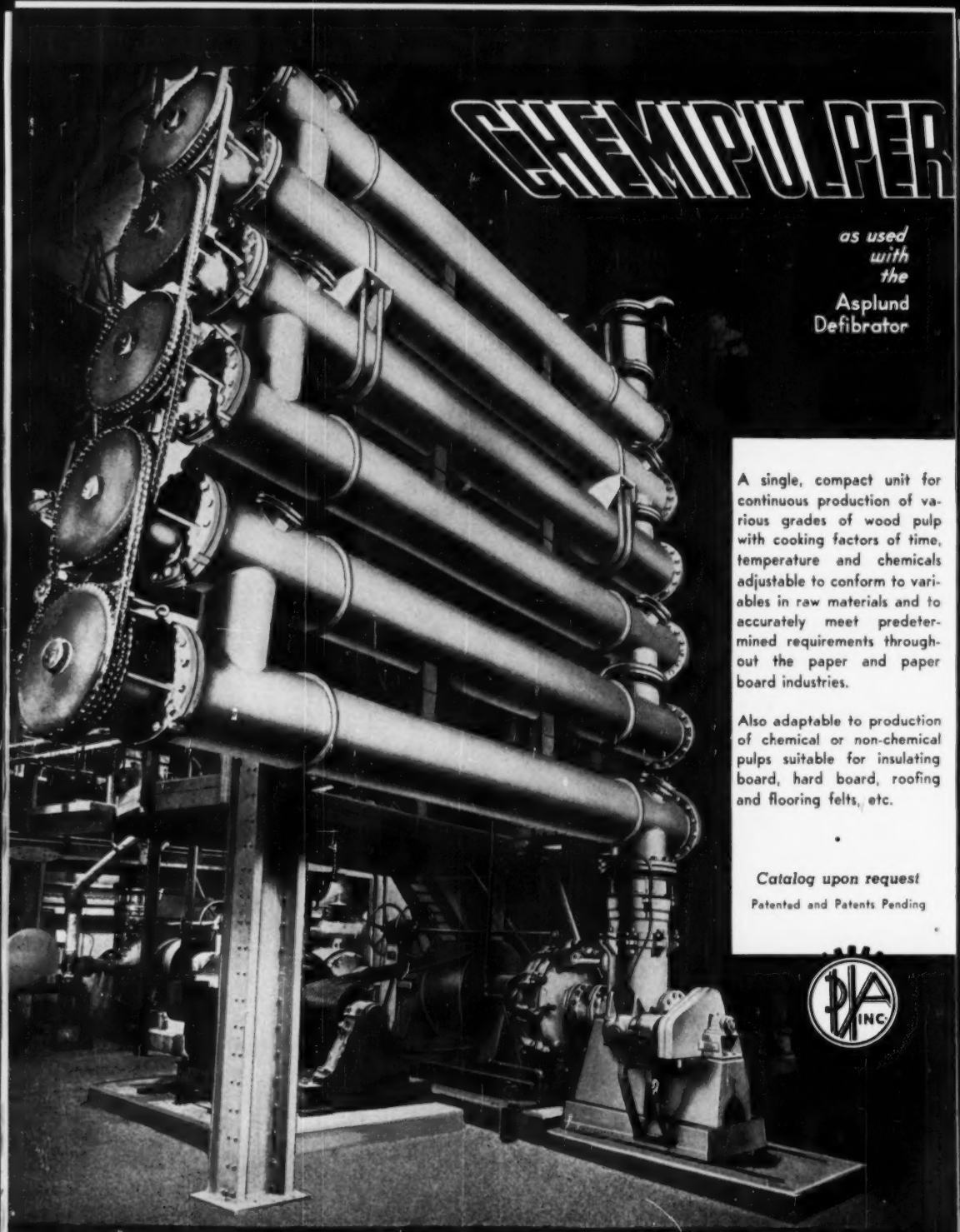

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as used with the Asplund Defibrator

A single, compact unit for continuous production of various grades of wood pulp with cooking factors of time, temperature and chemicals adjustable to conform to variables in raw materials and to accurately meet predetermined requirements throughout the paper and paper board industries.

Also adaptable to production of chemical or non-chemical pulps suitable for insulating board, hard board, roofing and flooring felts, etc.

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This highly refined chemical is smooth and free from grit and abrasiveness. It is high in opacity and covering power. In the coating formula, it assures the fluidity required for the extremely high speed of machine coating.

For years, Wyandotte has made a *business* of supplying manufacturers of quality papers with this truly fine pigment. May we supply you?

Information and technical data concerning the properties and application of Wyandotte Precipitated Calcium Carbonate will be furnished upon request.

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Army Awards Made

Awards have been made by the New York Quartermaster Purchasing Office, 111 E. 16th st., New York, N. Y., on QM-30-280-49-584 covering various paper bags, kraft, to:

Wortendyke Mfg. Co., Richmond, Va.—(Item 1) 625,000 ea. @ $2.94 M.

Scioto Paper Co., Columbus, Ohio—(Item 1) 2,125,00 ea. @ $3.09 M.

Pollock Paper & Box Co., San Antonio, Texas—(Item 1) 500,000 ea. @ $3.18 M.

Hudson Falls Paper Co., Inc., Hudson Falls, N. Y.—(Item 1) 2,500,000 ea. @ $3.09 M.

International Paper Co., New York 17, N. Y.—(Item 1, 2, 3) 7,500,000 ea. @ $2.910 M to $5.326.

Carpenter Paper Co., San Antonio, Texas—(Item 1, 2, 3) 3,500,000 ea. @ $3.09 M to $5.66 M.

Majestic Paper & Twine Co., Inc., New York, 3, N. Y.—(Item 1, 3) 5,300,000 ea. @ $4.29 M to $7.80 M.

Crown Willamette Paper Co., San Francisco, Cal.—(Item 2) 2,000,000 ea. @ $4.71 M.

Sylvan C. Ungerleider Co., San Antonio, Texas—(Item 3) 250,000 ea. @ $5.66 M.

Brooklyn Standard Bag Corp., New York 17, N. Y.—(Item 2, 3, 4) 7,875,000 ea. from: $4.47 M to $17.89 M.

Standard Bag Corp., New York 17, N. Y.—(Item 2, 3) 1,875,000 ea. @ $4.47 M; 125,000 ea. @ $5.33 M.

Carpenter Paper Co., San Antonio, Texas—(Item 5) 281,250 ea. @ $2.11 M.

Sylvan C. Ungerleider Corp., San Antonio, Texas—(Item 5 & 6) 281,250 ea. @ $2.11 M.

Wortendyke Mfg. Co., Richmond, Va.—(Item 5 & 6) 750,000 ea. @ $2.01 M to $2.94 M.

Scioto Paper Co., Columbus, 15, Ohio—(Item 5 & 6) 2,500,000 ea. @ $2.11 M to $3.09 M.

International Paper Co., Southern Kraft Division, New York 17, N. Y.—(Item 5 & 6) 1,450,000 ea. @ $1.989 M to $2.91 M.

Majestic Paper & Twine Co., New York 3, N. Y.—(Item 6, 7, 8 and 5) 6,070,000 ea. @ $2.87 to $7.80 M.

National Paper Co., Atlanta 1, Ga.—(Item 6, 8) 1,675,000 ea. @ $3.09 M to $5.66 M.

Brooklyn Standard Bag Corp., New York 17, N. Y.—(Item 7, 8 & 9) 7,987,500 ea. @ $5.33 M to $17.89 M.

Crown Willamette Paper Co., San Francisco, Cal.—(Item 7 & 9) 3,400,000 ea. @ $4.71 M to $16.07 M.

Standard Bag Corp., New York 17, N. Y.—(Item 7 & 8) 3,562,000 ea. @ $4.47 to $5.33 M.

Pollock Paper & Box Co., San Antonio, Texas—(Item 8) 375,000 ea. @ $5.80 M.

Trinity Bag & Paper Co., Inc., New York, N. Y.—(Item 9) 625,000 ea. @$15.38 M.

On QM-30-280-49-653 covering paper, Index Chemical, Wood Basis—50,000 each to:

Marquette Paper Corp., Chicago, Ill.—at $2.64 per C. Directive quantity was 50,000 sheets. This procurement is for the U. S. Army.

Hands Across the Sea

CINCINNATI — "At the last meeting of the board of directors of the Paper & Twine Ass'n. it was decided to engage in a program of good-will with the manufacturers, converters and wholesalers of the British Isles and the United States," John L. Richey, secretary-treasurer of the PTA, reports. "Since that directors meeting in Chicago last October, I have been in correspondence with Eric Whitehouse of Wiggins, Teape & Alex Pirie, Ltd., of London, who is a past-president of the National Ass'n. of Paper Merchants of England; with I. R. Ferguson of Wilson Guthrie & Co., of Glasgow, Scotland, president of the Association; and Claude J. Thorne, the present director of the Association in London. We are gradually working out plans for exchange of information and for cooperation with them of a good-will nature that we can announce very shortly and in which we hope every member of the Paper & Twine Ass'n. will cooperate.

"It would seem that much can be done by way of promoting international good will through this program to say nothing of some very practical exchanges of ideas for service in our respective fields," Mr. Richey continued.

"I anticipate that one of our active members will visit England in the coming spring, at which time he will be very helpful through personal contact in helping to carry out our program and we have extended an invitation to the British Association to try and be represented at our annual meeting in French Lick Springs next June."

P & A of S. Cal., Jan. 20

LOS ANGELES—The next meeting of Papermakers & Associates of Southern California will be held on January 20, at 6:30 p.m., at Ivan's Cafe and Restaurant, 12120 Long Beach boulevard, Lynwood, Calif.

The program for the evening will feature a talk by R. I. Greenwood of the Westinghouse Electric Corp., whose subject will be "Modern Electric Paper Machine Drives." As an added feature, Mr. Greenwood will screen the 15-minute technicolor film, "Industrial Plant Power Distribution Systems," John Doering, secretary, reports.

New Bleyer Quarters

MASPETH, Queens, L. I.—The Bleyer Realty Corp. has obtained a first mortgage loan of $280,000 at 4½ per cent for 15 years on the factory building being erected at 58-77 Fifty-seventh St.; to be occupied by the Alfred Bleyer Paper Co., which has occupied rented quarters in the Bohack Terminal, nearby, since 1926.

Alcohol Plant Starting

GATNEAU, Que.—The new plant of Commercial Alcohols, Ltd., here, is expected to commence operations shortly as the result of an agreement with the Canadian International Paper Co. It will process approximately 700,000 gallons of waste sulphite liquor every 24 hours from International's adjoining pulp mill.

Bridges EMBA President

GEORGETOWN, S. C.—W. S. Bridges has been elected 1949 president of the Employe's Mutual Benefit Ass'n., at the Southern Kraft paper mill here. Other new officers: Roddy Kissam, first vice-president; A. L. Thrift, second vice-president; and W. L. Godshall, secretary.

Otis to Tarentum

TARENTUM, Pa. — Edward C. Otis has been named master mechanic at the Tarentum Products Corp. He was previously with the Kimberly-Clark Corp., Neenah, Wis.; Beaver Products Co., Chicago; Fitchburg Paper Co., Fitchburg, Mass.; B. F. Nelson Mfg. Co., Minneapolis; and Dryden Pulp & Paper Co., Dryden, Ont.

Production Being Resumed

PORT WENTWORTH, Ga.—The jurisdictional strike at the Kraft mill of the Southern Paperboard Corp. here was terminated December 24, and production is being resumed, Wilbur F. Howell, secretary of the corporation, reports.

Harrington Walsh Successor

EAST WALPOLE, Mass. — Thomas Compton Walsh, sales manager of the Hollingsworth & Vose Co. retired on December 31 after 40 years of service with the company. Succeeding him, effective January 1, the company announced the appointment of Grant Harrington as sales manager.

Cromwell in Jersey City

JERSEY CITY, N. J. — The Cromwell Paper Co. of Chicago is opening a branch manufacturing plant at 812 Jersey avenue, where handmade and semi-handmade bags will be produced. John Flynn is superintendent of the new plant and Robert C. Clark is eastern sales representative.

New Towmotor Movie

CLEVELAND — An industrial sound-movie released for showing at groups and meetings by the Towmotor Corp., "The One-Man Gang," takes its audience into the plants of a leading manufacturers to show the methods employed to make reductions of materials handling costs.

St. Regis Mach. Div. Party

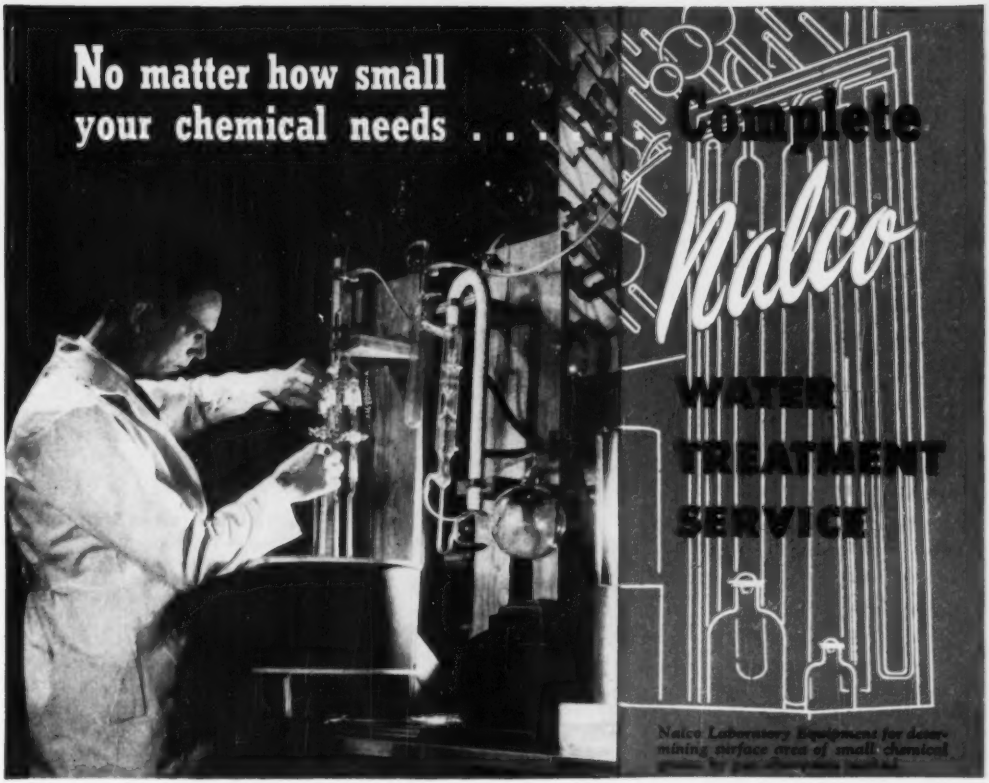
OSWEGO, N. Y.—St. Regis Paper Co., employes in the offices, sales and engineering departments, and their wives attended a holiday party at the Adams Hotel just before Christmas. Mrs. Ross Guernsey and Herbert Cooper were co-chairmen in charge of arrangements.

Richards to Bewin

CARTHAGE, N. Y.—Howard R. Richards, assistant supervisor of the Crown-Zellerbach National Paper Products Company, resigned his position, effective January 1, to begin work as mill superintendent at the Bewin Paper Co. specialty mill in Dansville, N. Y., on that date.

Zellerbach Ups Two

SAN FRANCISCO — King Wilkins has been appointed vice-president and general manager of Zellerbach Paper Co. at the instance of Harold L. Zellerbach. E. A. Breyman has been named senior vice-president.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ONE or more of these conditions usually cut chemical needs for water treatment:

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. . . Serving Industry through Practical Applied Science

Gratton-Weeks, Inc., Opens

HINSDALE, N. H.—Gratton-Weeks, Inc., a new industry, started production here on December 27 in a building recently erected on Canal street. Its principal product will be roll toilet tissue. Leo Gratton and Harold Weeks are the owners. In 1945, Messrs. Gratton Weeks acquired G. E. Robertson & Co., and its paper mill which they now operate. The Robertson mill will make the paper in jumbo rolls, and Gratton-Weeks, Inc., will take the paper in this form and convert it.

Warren Workers Nix Union

WESTBROOK, Me.—Employes of the S. D. Warren Co., paper mill, recently decided against union affiliation, it has been disclosed by the National Labor Relations Board. Results of the NLRB-supervised voting were announced as being 1,686 to 698 against bids by two AFL unions to represent the workers. About 2,400 were eligible to vote in the election. The plant remains the only large unorganized paper mill in Maine.

Upson Ups Deahl

LOCKPORT, N. Y.—Earle R. Deahl, of Arlington Heights, Ill., has been named district sales manager of the Chicago division of the Upson Co. The Chicago division includes Wisconsin, northern Illinois, Indiana and Michigan.

Philippine Cordage

WASHINGTON — The Philippines shipped only 1,999,151 pounds of cordage up to December 4, 1948, against an established quota of 6,000,000 pounds for the year, the Bureau of Customs reports, based on preliminary tabulations for 1948.

Flint, Hooker Upped

CHICAGO—By action of the board of directors of the Container Corp., of America, the following promotions have been made in the California Container Corp., effective January 1: N. Chase Flint, chairman of the board; William P. Hooker, president.

Moving to Rockford, Mich.

ROCKFORD, MICH.—Herman Gumbin, president of the Rockford Paper Mills Co., disclosed recently that the firm's box plant in Chicago is to be moved to Rockford and is expected to be in production here on March 1.

Supervisors Frolic

HAMILTON, Ohio — The Champion Paper & Fibre Co. Supervisors Association held its annual holiday season dinner December 16 with more than 150 of the association's 190 members attending.

Damon Club President

LOS ANGELES—Irving Damon of the Northern Paper Mills has been elected president of the Los Angeles Food Sales Managers Club, succeeding Jack Hall of the Atlantis Sales Corp.

Pittsburgh Sales District

BUFFALO, N. Y.—The National Gypsum Co. began operation of a new sales district with headquarters in Pittsburgh on January 1. William M. Ritchey, formerly manager of the Cincinnati District, is in charge. Walter J. Stroud, who has been supervisor of Gold Bond rock wool applicators in the Midwest, succeeds Mr. Ritchey in Cincinnati.

Link Belt Ups Two

CHICAGO—Link-Belt Co. has named R. E. Whinrey, formerly superintendent, to the newly created position of assistant general manager of the Link-Belt Dodge plant in Indianapolis; and L. C. Heinlein, formerly assistant superintendent, superintendent. The Dodge plant makes ball and roller bearings of both mounted and unmounted types.

Fabrican Ups Halford

RIVER ROUGE, Mich. — Robert D. Halford has been named sales manager of Fabrication Products, Inc. Mr. Halford, who was manager of the Chicago office for the past several years, assumed his new duties in River Rouge on January 3.

Fort Miller Blaze

FORT MILLER, N. Y. — Firemen battled a stubborn blaze at the Fort Miller Pulp & Paper Co. plant December 20. The blaze originated in the generator room. Mrs. Mary Thorpe, president of the concern, said that full operations would be resumed.

Trade Practice Rules

WASHINGTON — "Trade Practice Rules for the Trade Pamphlet Binding Industry of the New York City Trade Area" as promulgated December 31, were released by the Federal Trade Commission on that date.

New Educational Campaign

NEW YORK—The second phase of the Gummed Industries Assn., Educational and promotional Campaign to begin with the New Year will tell "Mr. Ship" how to "Seal It Right With Gummed Tape."

Purchasing Agent

VANCOUVER, B. C.—Oscar G. Smith has succeeded the late R. A. Baker as purchasing agent of the Powell River Co., Ltd. He joined the ecompany 31 years ago.

Addition Nears Completion

HARTFORD CITY, Ind. — The Ft. Wayne Corrugated Paper Co's. box plant addition, begun here last July, is expected to be completed by March 1.

New Hoist Line

YORK, Pa.—The Wright Hoist Division of the American Chain & Cable Co., Inc., has launched a new series of Wright Speedway electric hoists.

Pension Group Dinner

WORCESTER, Mass. — The Sheppard Envelope Co. employes' pension group held its fifth annual dinner at the Sheraton Hotel on December 28.

Principal addresses at the affair were given by Miss N. Myra Glazier, president of the company, and Linwood M. Erskine, clerk and director of the company.

The Sheppard Envelope Co., is believed to have been the first in the industry to provide a plan for retirement income for employys.

Gaylord Expansion

BOGALUSA, La. — The Gaylord Container Corp. will launch an expansion program to include the construction of a $2,000,000 bag plant here, Vertrees Young, executive vice-president, disclosed on December 28. The $2,000,000 plant is in addition to a $9,000,000 program which the company started last year. The addition will provide 270,000 square feet of floor space.

Gerhart Leaves Champion

ELIZABETH, N. J.—Frank C. Gerhart has been appointed advertising manager of the American Type Founders Sales Corp. Mr. Gerhart worked with the Champion Paper & Fibre Co. in Hamilton, Ohio, for the last 12 years.

Made Asst. Gen. Mgr.

MONROE, Mich. — C. Q. Baron has been appointed assistant general manager of the Consolidated Paper Co. H. Lee Rauch, president and general manager, said Mr. Baron will continue as secretary and assistant treasurer.

Production Committee

OTTAWA — The Labor Department, Canadian Government, reports that a Labor-Management Production Committee has been recently established at the Canadian Nashua Paper Co., Peterboro, Ont.

New 'Eastern' Distributor

PHILADELPHIA — The Garrett-Buchanan Co., has been named distributor for the Eastern Corp., Bangor, Maine, in the Philadelphia, Baltimore, and Lancaster areas, effective January 3.

Berger Milton G.M.

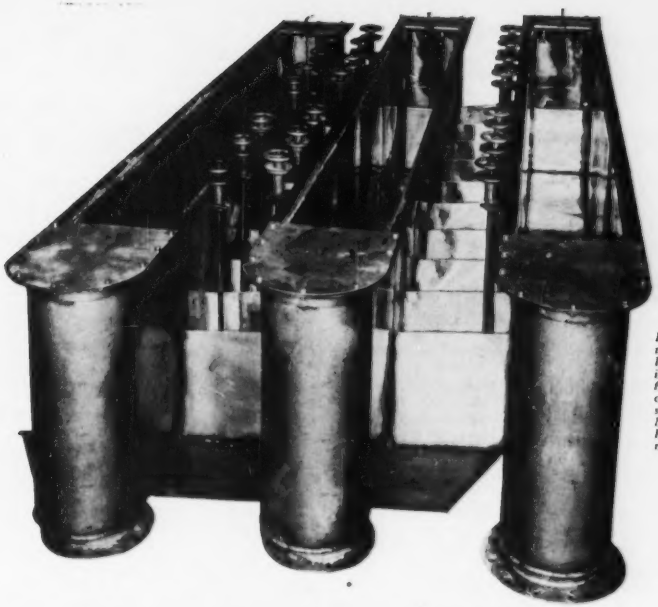
NEW YORK—Sig Berger has been named general manager of the Milton Paper Co., Inc. The promotion came on the eve of Mr. Berger's second anniversary with the firm.

Goodyear Names Ruscoe Co.

AKRON, Ohio—W. J. Ruscoe & Co., 2170 West Market St., has been named a distributor for Plobond, adhesive by the chemical division of the Goodyear Tire & Rubber Co.

Van Alstyne to Hubbs

TROY, N. Y.—W. N. Van Alstyne is a recent addition to the Charles F. Hubbs Co., here. Mr. Van Alstyne comes to Hubbs from the Hudson Falls Paper Co.



Board machine headbox made of ½" sheet Monel. Interior surfaces are polished "35" Monel to prevent fiber accumulation. Fabricated by Brown-Hutchinson Iron Works, Detroit, Michigan, for the River Raisin Paper Co. of Monroe, Mich.

NO TOEHOLD FOR FIBERS HERE...

It's made of "35" MONEL

The River Raisin Paper Company... like other leading paper mills... has found that it pays to use Monel*.

The headbox pictured above *could* have been a source of trouble from fiber deposits and slime...rust stains ...losses in down-time...costly repair bills. But maintenance engineers of the River Raisin Paper Company have confidence in it because it is made of solid, easy "wetting," rust-proof Monel.

Strong, corrosion-resistant Monel has shown to be more wettable than other materials used in this application. This, combined with the satin finish smoothness of "35" Monel, assures a free flow of fibers... protects against the formation of paper-ruining slime.

Monel has "made-to-order" properties for paper mill applications. It is stronger than structural steel, highly abrasion resistant, and capable of taking a high polish. Welds in Monel are as corrosion resistant as the alloy itself.

Typical plant-tested applications of Monel include stock lines, screens, save-alls, jordan bars, winding wire, tanks, roll cover, doctor blades, and many others.

Why not investigate the product-protecting possibilities of Monel for your own mill? Send for your free copy of: "*Monel, Nickel, and Inconel in Pulp and Paper Mills.*" This illustrated booklet will show you how other mills have solved corrosion and production problems with INCO Nickel Alloys.

Remember, too, that INCO's Technical Service Department is always ready to help with special problems concerning corrosion, metal selection and fabrication.

*Reg. U. S. Pat. Off.

MONEL

...FOR MINIMUM MAINTENANCE

EMBLEM OF SERVICE

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THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.

Basis of Conservation

(Continued from page 13)

tive," with basic national standards and Federal financial assistance.

Recommended as also necessary are proposals for increased public aid in fire protection and insect and disease control; increased technical advice and assistance for forest-land owners and processers, especially small ones; public aid in the development of cooperative management and marketing associations of forest owners; provision for long-term, low interest loans to help finance timber-growing enterprises; and more research on problems of timber growing and forest management.

In addition, the report points out that it will be necessary for the public to acquire certain lands not well suited for private ownership because of low productivity, long deferred income because of the depleted condition of the forest, or vital public interest in watershed protection and community welfare.

Although the National Forests "cannot by any means supply all the Nation's requirements for wood," the Chief Forester asserted that, managed as they are for sustained yield, they will be a "never-ending source of timber, a big help in carrying us through until the country's total sawtimber growth can be built up by good forest practices, a permanent support for many local industries and communities, and a backlog of security in the Nation's future."

The report concludes that "with adequate safeguards for the public interest in all forest land, with encouragement to private enterprise in timber growing and with full development of the public forests, our forest resource can eventually be built up and maintained to supply timber in abundance and to provide all the other benefits of well-managed, productive forests for all time."

"Other benefits" reported upon relate to the national forests and deal with forage for livestock, recreation, water and wildlife. Since development and use of two or more of these resources is usually possible on the same area, the report declares that if the highest sum total of services and benefits for the public as a whole is to be had the forests must be managed on a "multiple use" basis. This is in accord with the principle laid down by the then Secretary of Agriculture, James Wilson, in 1905, when the national forest system was established, that these public properties be administered "for the greatest good of the greatest number in the long run."

Endorsement of this "multiple use" principle by the House Committee on Public Lands following a series of hearings in western States on Forest Service handling of the 80,000,000 acres of grazing lands in National Forests is noted in the report. The Committee recommended a 3-year moratorium on reductions in the number of livestock permitted to be grazed on national forest range, but hte Secretary of Agriculture held that some reductions were badly needed now to stop serious deterioration of range land vital to local water supplies as well as to a stable livestock industry.

Though it is unfortunate that these reductions hit some individual permittees rather hard, says the report, in the aggregate they will amount to very little as planned up to 1951 and will have only a negligible effect on the national meat and wool supply. Meanwhile, the Forest Service is reseeding some of the more seriously depleted ranges, more than 150,000 acres of national forest land having been reseeded to date. Nearly 9,000,000 cattle, sheep, calves, and lambs are reported to have grazed on national forest range in 1948.

Dealing with the other major resources, the report says that of 21,000,000 recreational visits to national forests last year, 13,000,000 were to established camp, picnic, sports and summer home sites, while 8,000,000 were to less accessible back country such as wilderness or hunting ground. Calling the Nation's water supply "a problem of growing concern," the report tells of a stepped-up program of studies to provide long-term watershed-management plans for more of hte 180,000,000 acres of national forest land. Recalling that Congress has appropriated no funds directly for wildlife work on National Forests in the past two years, the report says "a big backlog of needed work and of critical maintenance of pre-war developments has piled up." Since 1921, when the first country-wide, national forest estimate of game populations was made, big game numbers have nearly quadrupled, the report says.

Operation and management of national forests, together with their protection from fire, insects and other menaces, cost less than one-tenth of one percent of the tax dollar, according to the report. Expenditures by the Forest Service for those purposes last year were approximately $32,000,000 while about $13,000,000 additional was spent from funds appropriated by Congress for roads, trails and the purchase of land, part of which can be classed as capital investment. Operating expenses were offset, in large part, by national forest receipts, which last year totalled nearly $25,000,000, a figure that takes no account of the wealth of public services and benefits deriving from the non revenue producing resources of these publicly owned forests.

Driverless Truck Shown

PHILADELPHIA — A driverless fork truck operated by ray control is being shown by the Automatic Transportation Co., Chicago, at the Third National Materials Handling Exposition, which opened here for a week on January 10. The truck is a compact unit designed for handling loads of about three-quarters of a ton.

The operator, in a control both behind a one-way vision glass screen, is able to see the entire floor before him. Using a panel of dials and buttons, he guides the vehicle through its entire "look—no hand" routine. Without assistance the unit picks up a capacity load, carries it to the other end of the work area, raises it as high as 134 inches above the floor, and stacks it as merchandise would be tiered in a warehouse or factory.

The special control unit was designed for Automatic by Charles A. Nash and L. R. Beardsley of the Illinois Institute of Technology electrical engineering faculty.

New Collins Plant Tenant

SPRINGFIELD, MASS.—In the not too distant future, the plant of the Collins Mfg. Co., at North Wilbraham, idle for some time, will house a new industry. The way was cleared for this development in Hampden County Probate Court on January 3, when Judge Thomas H. Stapleton empowered Mrs. Margaret (Whiting) Bast of Springfield and James G. Whiting of Holyoke to buy the first mortgage on the property from the Union Trust Co., of this city for $100,000. Sufficient assets of the estate of S. R. Whiting are to be sold to finance this transaction.

Involved in the arrangements made with creditors and Judge Stapleton was an offer by Karl Katz of New York City to purchase for $25,000 all furniture, fixtures and equipment including all papermaking machines and related manufacturing equipment.

New Gottesman Lecturer

ROCHESTER, N. Y.—Professor Dexter Perkins, of the University of Rochester, has accepted an invitation from the University of Uppsala, Sweden, to give the 1949 Gottesman Lectures there. His subject will be American History. Prof. Perkins, head of the Department of History at the University of Rochester since 1925, will leave for Sweden in March. During the academic year 1945-1946 he was visiting professor at Cambridge University, England. The lectures are financed by a fund established by D. S. Gottesman, president of Gottesman & Co. and Central National Corp. of New York and donated in 1947 to Uppsala University. The 1948 Gottesman lecturer at Uppsala was Professor Stanley T. Williams, Professor of American Literature at Yale University.

Marking 40th Anniversary

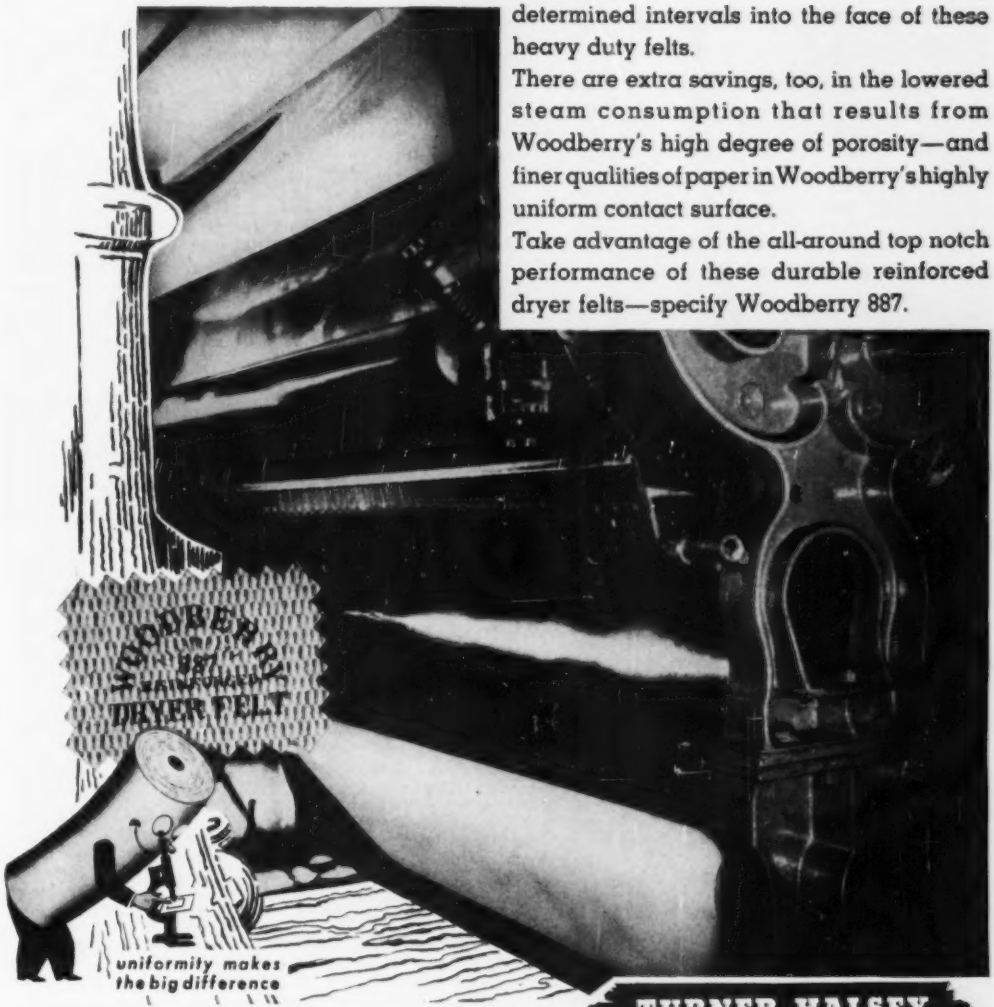
PHILADELPHIA—Celebrating its 40th anniversary in the steam engineering field, the Yarnall-Waring Co., devotes the current issue of the *Yarway News* to a picturization of important Y-W installations and products, accompanied by the story of the firm's founding and career.

You're Facing Extra Savings With Woodberry 887 Dryer Felts

There are hours and hours of extra wear in Woodberry 887 dryer felts. It's the result of Woodberry's patented feature—asbestos yarns woven at scientifically determined intervals into the face of these heavy duty felts.

There are extra savings, too, in the lowered steam consumption that results from Woodberry's high degree of porosity—and finer qualities of paper in Woodberry's highly uniform contact surface.

Take advantage of the all-around top notch performance of these durable reinforced dryer felts—specify Woodberry 887.



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Washington Visitor Real Paul Bunyan

WASHINGTON—This capital saw the "real" Paul Bunyan, when Donald D. Davis, president of Minnesota & Ontario Paper Co., Minneapolis, arranged for his firm's Len Costley, six-foot-six impersonator of the mythical woodsman, to appear as a feature attraction on Paul Bunyan Day, January 7, sponsored by the Minnesota State Society of Washington.

Governor Luther Youngdahl of Minnesota hands Mando's Len Costley, who specializes in the lore of Paul Bunyan, a Centennial invitation for transmission to President Truman, as the intrepid woodsman prepares to fly to Washington.

Mr. Costley, in Bunyan costume, complete with axe, whiskers, and logging boots, flew to Washington to present Truman with an invitation from Governor Youngdahl to attend the Minnesota Centennial in 1949. He also bore Centennial gifts for the President's family.

Having spent a major portion of 40 years as a lumberjack in and around Northern Minnesota, Mr. Costley, plant guard captain of the Mando mills at International Falls, has accumulated a wide knowledge of Bunyan legends. So many, in fact, that he has become accepted as a Paul Bunyan authority for the past 14 years. In 1948, he appeared throughout the Upper Midwest as well as at various festival activities in Canada.

ECA Manila, Sisal, Cotton

WASHINGTON—Extensive orders for manila and sisal supplies are included in latest ECA procurement authorizations. Covering fourth quarter, 1948, the authorizations call for $280,000 worth of manila or abaca from the Philippines, and $4,095,000 of sisal or henequen from Latin American sources, for Denmark and France respectively.

ECA also called for $800,000 of cotton waste from the U. S. and possessions for the United Kingdom in the first quarter, 1949, and $450,000 of cotton linters from the same sources, for Italy.

Freight Carloading Forecast

NEW YORK—Freight carloadings in the first quarter of 1949 are expected to be 2.1 percent above those in the same period in 1948, according to estimates compiled by the 13 regional Shippers Advisory Boards, the American Pulp & Paper Ass'n., reports. The estimated carloadings of paper, paperboard and prepared roofing are 288,280 cars, or an increase of .03 per cent above the actual loading of 288,187 cars in the first quarter of 1948.

Czechoslovak Exposition

NEW YORK — The Czechoslovak Industries Fair, a trade and cultural exposition, opened in the New York Museum of Science & Industry in Rockefeller Center on January 12 and will continue through January 30. Designed to stimulate trade between Czechoslovakia and the United States, the fair will display hundreds of thousands of dollars worth of the Czechs' most modern manufactured products, including those made from paper.

Sweden Sees Trade Balance Ahead

OTTAWA—Sweden expects to achieve an international trade balance by 1952-1953 through an increase in the value of her exports and reduction in the value of her imports, with the details of a four-year economic program whereby a greater measure of stability may be obtained having been presented to the Organization for European Economic Co-operation, according to a report in Foreign Trade, Department of Trade and Commerce, Canadian Government, by D. B. Mundy, assistant commercial secretary for Canada. He states that "special attention will be given to increasing production of rayon pulp and bleached paper pulp."

The export of paper will be increased by 20 percent, from the prewar level, by more extensive restrictions on home consumption of paper and by a further increase in productive capacity, Mr. Mundy states, pointing out that the overall target for the export of forestry products in 1952-1953 is an increase of $50 million over the 1947 figures.

Continued expansion of hydro-electric power is given priority in the program, he reports. The production of water power, which before the war amounted to 9,000 million kilowatt hours, is expected to reach 21,000 million kilowatt hours in 1953, corresponding to annual increase of 1,300 million kilowatt hours. The total cost of this expansion program during the coming five-year period is estimated at approximately $40 million, a considerable proportion of which covers the import of machines and materials. Home productive capacity of electrical equipment, generators, transformers, insulating materials, etc., however, is being increased to approximately double the prewar capacity. Extensive construction projects and machine installations have been planned for the next few years.

Wallpaper Normalizing

CHICAGO—As the wallpaper industry approaches its first post war major selling period under anything like normal circumstances, William H. Yates, president of United Wallpaper, Inc., cited several factors contributing to a generally improved outlook for United for 1949.

"On July 1, 1946, the industry was in a critical condition because of shortages of raw paper stock. Most distributors overbought to secure as much merchandise as possible. Thus, tremendous overstocks resulted, which led to a retarding effect on the manufacturing industry in the second year of the 1947-1948 line.

"All of this is now history. With supplies and particularly raw paper stock readily available, distributors have placed orders in normal, reasonable quantities, which should not only lead to economies in production but also sustain volume on a more level basis.

"In both the retail and wholesale field, most dealers and distributors across the country report consumer purchasing at a high level, with the Pacific Coast territory developing rapidly as an expanded wallpaper outlet.

"With the better grades of wallpaper continuing to show the greatest saleability, the general price structure in wallpaper has expanded somewhat. While the present landlord-tenant market is still a highly speculative problem, any substantial developments in the rental field will eventually reinstate its importance as an accountable factor."

Klein Consulting Engineer

HOUSTON, Tex.—Hugo Klein is now operating as a consulting chemical engineer at 4415 Roseneath Drive, after 20 years of varied and extensive experience in research, process development, plant and laboratory design.

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When ARMCO "ELC" (Extra-Low Carbon) Stainless Steel was perfected, work was started on the world's first large heat-sulfur recovery system from sulfite mill blow gases.

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Now, with a maximum carbon content of .03%, fittings made of ARMCO Type 316 ELC *do not require annealing after welding.*

This new grade of ARMCO Stainless has opened a "savings account" for a western pulp mill. For each air-dried ton of bleached sulfite pulp produced in the last six months this mill saved 40 pounds of sulfur and 950 pounds of steam through its huge recovery system. The sulfur dioxide gases are recovered and used over and over instead of being lost to the atmosphere.

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Savings may be possible with ARMCO ELC in *your* plant too — in any welded equipment exposed to corrosion at service temperatures below 800° F. It costs less than the stabilized grades. And "ELC" is ideal for equipment such as acid bleachers, blow-pit bottoms, blow-pit target plates, acid digesters, inlet manifolds, screen plates and size cookers.

Write for more information about ARMCO ELC Stainless, or ask your fabricator to inquire. Armco Steel Corp., 86 Curtis St., Middletown, O.

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Welding "Y" fitting of 10 and 12 gage ARMCO Stainless Type 316 ELC for system used in recovering sulfite blow-pit gases. Piping is six feet in diameter.

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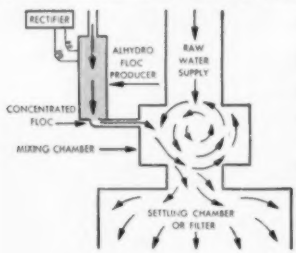
Simple to operate, easy to maintain, one unit measures only 45″ x 13″ x 34″, and will treat an average of 300,000 gallons of water per day. The Alhydro unit may be installed singly or in multiples, in existing or proposed water treatment plants.

This installation of ALHYDRO FLOC PRODUCER in your water treatment plant will provide you with . . .



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Lodge Seeks Power Surveys

BOSTON, MASS. — Power-conscious paper manufacturers in New England were informed on January 6 that Senator Henry Cabot Lodge (R-Mass.) has asked the government to undertake power development surveys on all New England rivers where such development appears feasible.

His principal purpose, he said, "is to determine the full potentialities of these rivers as sources of sorely-needed and reasonably priced hydro-electric power which New England farmers, manufacturers and home owners must have."

In the bill filed in Washington, Sen. Lodge mentioned the tendency of large industrial concerns to move from New England "because of the high rates locally charged for power."

Naming specifically the Merrimack and Connecticut Rivers and their tributaries for surveys, but including all others where power development is practicable, Sen. Lodge included flood control and recreational development as other purposes of the survey to be made by the Army Engineers and the Federal Power Commission.

Rayon Pulp for Japs

NEW YORK—Bids on a recent Army invitation for dissolving pulp for the Japanese rayon industry recently disclose that each of the bidders quoted a price for the full quantity of pulp requested by the Army.

Following are bids and prices on 1,477 net long tons of rayon pulp (Item 1 calls for delivery f. o. b. cars, contractor's shipping point in United States or Canada; Item 2 for delivery, f. a. s. port in U. S., or Canada having adequate loading and berthing facilities; and Item 3 for delivery, c. and f. Yokohama):

Bidder (prices): Buckeye Cotton, Oil Co. of Memphis, Item 1, $ .10 per pound f. o .b., Memphis; $ .103 per pound f. a. s., New Orleans; Flof Hansson acting for Aktiebolaget Molnbocka—Trysil, Item 3, $234.71 per long ton; same bidder (different component in bid), Item 3, $220.48 per long ton; American Trading Co. acting for Svenska Cellulosa A-B Stockholm, Item 3, $242.00 per metric ton.

E. Pakistan Pulp Mill

KARLSTAD, Sweden—East Pakistan will have a 100-ton-a-day bamboo pulp manufacturing mill and auxiliary industries by 1952. The industry will be owned by the State and will cost the Government about 15,000,000 rupees.

The blueprint of the industry is expected to be ready by June 1949 and envisages, besides *paper* and board, manufacture of gypsum boards for prefabricated construction.

The Government of Pakistan have entered into an agreement with Messrs. Aktiebolaget Karlstad Mekaniska Workstad of Sweden and Stadier Horter, of Canada, separately, for draft blueprints for the industrial system.

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Calgon chemists have developed many other applications of Calgon in the pulp and paper industry, in addition to its use in coatings. We will be glad to send you detailed accounts of these applications and of the properties of Calgon. Ask for "Calgon Applications in the Pulp and Paper Industry", or write us concerning specific problems in which you are interested.

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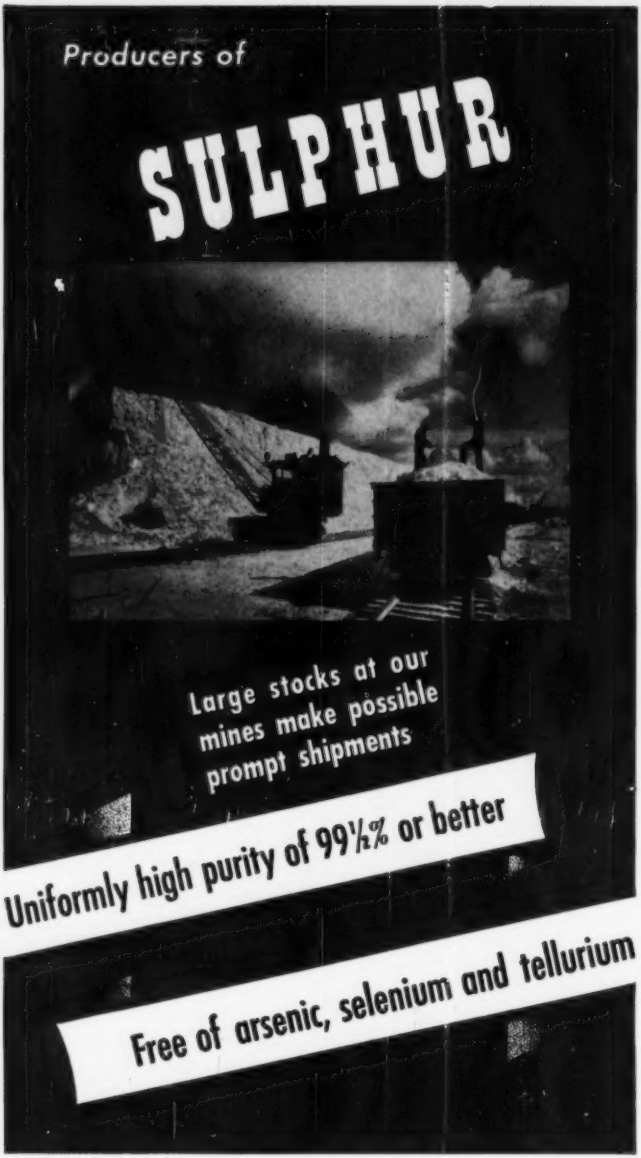
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Host to Research Associates

SYRACUSE, N. Y.—The New York State College of Forestry was host on January 7 to men representing the 14 paper mills which are members of the Empire State Paper Research Associates, Inc.

The group represents mills which have been partners with the college in a two-year project, now near completion, to discover successful methods of pulping hardwood. H. M. Gray, director of production of the Oswego Falls Corp.-Sealright Co., Fulton, N. Y., is president of ESPRA.

After the business meeting from 9 a. m. to noon, the group lunched in the Museum Room of Marshall Hall on the College of Forestry campus. Representatives of Syracuse's college at the conferences included: Dean Joseph S. Illick, Dr. Hardy L. Shirley, Prof. Clarence E. Libby, Prof. Frederic E. O'Neil, Prof. Paul M. Schaffrath, and Burton E. Helberg.

Tax Evasion Indictment

CHICAGO—The U. S. grand jury on December 22 indicted Alfred V. Pleasance, former Montgomery Ward chief purchasing agent, on charges of evading $58,497 in income taxes from 1942 to 1945.

U. S. Atty. Otto Kerner, Jr., said the unreported income represented side payments to Mr. Pleasance by the Marquette Paper Co., 700 West Lake street, from whom Ward's bought $1,000,000 worth of paper a year for its catalogues. Mr. Kerner said Mr. Pleasance was discharged in 1947, and that for the four years in question, Mr. Pleasance reported income of $64,798 and paid $19,826 in taxes. Mr. Kerner said he actually earned $160,355 on which he should have paid $78,323 in taxes.

Newsprint, Paper Supply

(Continued from page 16)

the doubling of productive capacity of the largest newsprint mill in the South —the Southland Paper Mill located at Lufkin, Tex.—and to the beginning of construction of a huge new newsprint and paper mill by the Coosa River Newsprint Co. at Childersburg, Ala. This new mill will soon be in production.

In October of 1947, at the invitation of Prime Minister George A. Drew of Ontario, the committee held a series of conferences at the Royal York Hotel in Toronto, Canada, at which the newsprint and paper supply situation was thoroughly discussed. These conferences were attended by Canadian and provincial government officials, representatives of the Newsprint Association of Canada and of practically every Canadian newsprint manufacturing concern as well as a number of newsprint and paper manufacturers from the United States. Many prominent Canadian and United States newspaper and magazine publishers were in at-

(Continued on page 58)

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Newsprint, Paper Supply

(Continued from page 56)

tendance. The United States Departments of Commerce and Agriculture, the American Newspaper Publishers Association, the National Editorial Association, and all of the major press associations of the United States and Canada were also represented at the conference.

Problems of mutual interest and concern were freely discussed and a great deal of valuable detailed information was obtained for the benefit of the people of both countries. Your committee wishes to especially mention the splendid cooperation and great assistance extended by Mr. Robert M. Fowler, president of the Newsprint Association of Canada during the conference.

First-hand information was given the committee as to the plans of the newsprint manufacturers of Canada to increase their production by some 300,000 tons during 1949, 1950, and 1951 through greater operating efficiency and the installation of new papermaking machinery in existing mills. The possibility of reactivating one or more Canadian mills which had been idle for some time was also discussed. Since the conferences, Canadian newsprint production has been stepped up even more than contemplated at that time. The committee learned, however, that there would be a definite limit on the total amount of newsprint which could be produced in Canada as a result of the new policy of the provincial governments of Canada to regulate and control the amount of pulpwood which may be taken from the Crown forests to the annual cut which can be replaced by actual crop growth.

Members of the committee were assigned to visit various laboratories and to make first-hand studies of experiments being conducted on methods for production of paper from southern woods, and to also study newsprint and wrapping-paper mill operation in the South. Visits were also made by committee members to established mills, forest lands, and sites for new paper mills in the South. Reports made by these members to the committee were received with great interest.

III. Newsprint and Paper Supply Situation

During the past 2 years and at the present time the publishing industry of the United States has been receiving and using more than 60 percent of the total available world's supply of newsprint. Since the end of the war there has been a very heavy increase in newsprint production, especially in Canada. Newsprint imports into the United States from Europe in 1948 will be nearly double those of 1947. During the first 9 months of 1948, imports from Europe into the United States were 193,756 tons as compared with 85,545 tons for the same period of 1947. Incidentally, during the same period of time, the United States exported 23,088 tons of newsprint, with practically all shipments being made to Mexico, Cuba, Central and South America, the Philippines, and to India.

In the first 11 months of 1948, 758,000 tons of newsprint were produced in the United States as compared to 759,674 tons produced in the same period of 1947. This loss in production in the United States is attributed to the switching over of some newsprint machines to the manufacturing of book and magazine papers.

During the first 11 months of 1948, Canada exported to the United States, 3,534,481 tons of newsprint as against 3,373,119 tons in the first 11 months of 1947—a net gain of 161,362 tons for the 11-month period, over the previous year. During the first 11 months of 1946, however, the United States received but 3,071,860 tons of newsprint from Canada, while in 1945 newsprint imports from Canada for the first 11 months were only 2,334,546 tons. From these figures it can readily be seen htat our newsprint imports from Canada have been increased by nearly 60 percent since the close of the war.

The Newfoundland newsprint mills, due to a drought condition, barely held their own in production during 1948. During the first 11 months Newfoundland newsprint production totaled 347,779 tons in comparison with 344,476 tons produced in the same period of 1947. However, out of the newsprint production in Newfoundland for 11 months of 1948, the United States received 223,187 tons as compared with 185,721 tons received from the same source during the same period of 1947.

The total over-all production of newsprint in North America, including all mills in the United States, Canada, and Newfoundland amounted to 5,320,546 tons for the first 11 months of 1948 as compared with 5,182,014 tons for the similar period of 1947, 4,846,533 tons for the first 11 months of 1946, and 3,950,509 tons for the 11 months of 1945. Of these totals newsprint users in the United States received 4,507,671 tons in the first 11 months of 1948, 4,314,928 tons during the same period of 1947, 3,950,075 tons in 1946 and 3,090,833 tons in 1945. So the total amount of newsprint made available to consumers of newsprint in the United States during 1948, including shipments from Europe, will be approximately 300,000 tons more than in 1947, nearly 750,000 tons more than in 1946, and over 1,650,000 tons more than in 1945.

The increase in newsprint production in the United States and Canada during 1948 was accomplished largely through the installation of new manufacturing machinery by several mills. The Southland Paper Mill at Lufkin, Tex., brought a new machine into production early this year which added 70,000 tons to their annual output. The Bowater Paper Co. have completed installation of a new 284-inch newsprint machine at their Corner Brook, Newfoundland, mill which will soon add 100,000 tons a year to their production, and the Powell River Paper Co., Vancouver, British Columbia, have increased their annual newsprint production by 22,000 tons as a result of new equipment put in operation early in 1948. The Coosa River Newsprint Co. at Childersburg, Ala., expects to have their new mill, with an annual productive capacity of 100,000 tons of newsprint and 40,000 to 60,000 tons of kraft, tissue, and rotogravure papers, in operation by January 1950.

As an indication of the future paper supply situation and possible price trend, the committee calls attention to recent reductions in Canadian pulpwood and wool-pulp prices, and to the

(Continued on page 60)

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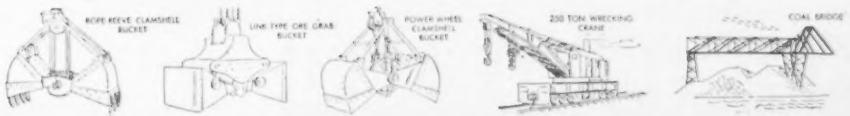

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Newsprint, Paper Supply

(Continued from page 58)

fact that in recent months wood-pulp imports into the United States have been declining.

IV. Increased Use of Newsprint

While the production of newsprint in Europe and North America has been increasing at a remarkable rate, the consumption of newsprint in the United States has also shown a great increase. Newsprint supply is gradually catching up with demand, yet many United States publishers are still unable to obtain all of the newsprint they desire. It is difficult to make an accurate estimate of what the true demand may be, but there is every indication that newsprint will be in a tight, if not short, supply during 1949 and into 1950. In this connection it should be pointed out that the demand for newsprint usually increases, rather than decreases, in periods when competition in retail trade and business becomes sharper. So, while increased supplies of newsprint for the use of the publishers of the United States will become available in 1949, as the result of heavier imports from Europe, the expansion of present newsprint manufacturing facilities in Canada, and the bringing into production of new paper machines and mills in the United States, increased demand is also expected to continue in such volume as to offset much, if not all, of the gains which are being made in newsprint production.

V. Newsprint Prices

During the past 2 years newsprint prices have advanced an average of $10 a ton. The mills have given as a justification for these increased newsprint prices, their higher costs for labor, coal, and transportation. The committee believes that its active interest in newsprint prices may have been of real benefit to United States consumers in preventing even larger price increases. However, in all fairness to the producers, the committee wishes to point out the price of newsprint has not increased more, if as much, in proportion, during the past 2 years, than have prices of many other staple commodities.

VI. Other Paper and Paper Supplies

The committee found it possible to devote less time to the problems of production and distribution of book, catalog, and other papers and paper supplies than to the more pressing problems of newsprint supply where the greatest shortage existed. However, during its life, the committee was in rather constant contact with practically all manufacturers and distributors of book, writing, and wrapping papers in the United States. This industry has encountered many difficulties because of labor, water and power shortages, increased wages, higher transportation costs, and other greater operating expenses. In addition, the recent limitations on the shipment of Canadian pulp and pulpwood into the United States created a serious problem and resulted in heavier manufacturing costs for the industry. However, in spite of all these difficulties, the book and wrapping paper industry greatly increased its production. A number of price increases, many of them quite substantial, have been put into effect since the close of the war. These higher prices are now seemingly having considerable effect on demand with the result that, at the present moment, outside of a few grades of wrapping paper, no shortage of book, wrapping, writing, or fine papers is apparent. Instead there is strong indications that the seller's market in these types of paper is about over, and that during 1949 there will be such an oversupply of these papers as to bring about a buyer's market, and probably with it lower prices.

VII. Future of Paper Industry in U. S. and Canada

The committee feels that an extensive and economically sound newsprint industry can be developed in the south-

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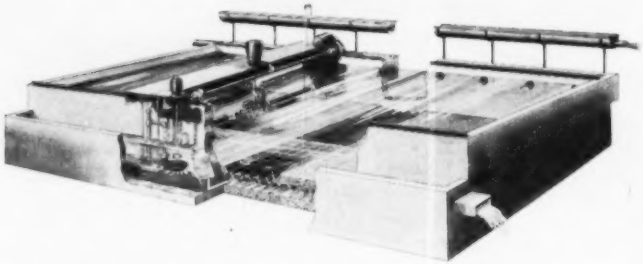

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ern United States, as a result of recently developed new methods which will permit the use of various types of southern woods in the manufacture of paper. These pulpwood trees, which are more rapid in growth than northern timber, can and should be planted and harvested as a crop in many sections of the South. Better climate and working conditions, abundant natural gas, and shorter shipping distances all contribute to lower production costs in that section of the country. A number of private and public laboratories are engaged in research in connection with the processing of southern woods and the manufacturing of paper therefrom. There is every indication that, with proper initiative and financing the Southern States can provide the United States with nearly 2,000,000 tons of newsprint per year, in addition to producing many grades of wrapping and other papers. It is a field of endeavor which should receive the constant and sympathetic attention of the Congress, Government agencies, and the American people generally, for an adequate supply of newsprint and other papers from domestic sources is necessary to our peacetime economy and absolutely vital in case of war.

This committee has also been cognizant of the possibility of establishing a large paper industry in Alaska, where huge reserves of timber are to be found. Exploratory and research work is now going on in that Territory. Whether newsprint and other paper can be produced in Alaska on an economical basis, or whether the splendid timber to be found there can be better used for other purposes in furtherance of our national economy, should be ascertained in the not too distant future. Certainly the possibility of paper production in Alaska should continue to be studied in connection with the development of America's great northern Territory.

The committee has watched with interest the experiments and developments of the last 2 or 3 years in connection with the production of pulp and paper from waste paper and through the use of de-inking and de-waxing methods.

VIII. Conclusion

In conclusion the committee wishes to officially recognize and give full credit to the American Newspaper Publishers Association, the National Editorial Association, the American Paper and Pulp Association, and other professional and trade organizations, individual manufacturers, publishers, and paper distributors for the splendid assistance and great cooperation they have given this committee in helping meet the newsprint and paper supply shortage which existed at the time the committee was created.

The committee also desires to express its appreciation to officials of the United States Steel Corp., the Westinghouse Corp., the Pennsylvania Dixie

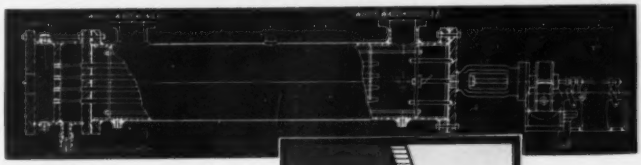
(Continued on page 62)

AT LAST IT'S HERE!

.....CONTINUOUS WHITE WATER HEATING WITH NO SHUTDOWNS FOR CLEANING.....

Paracoil Automatic SELF CLEANING WHITE WATER HEATER

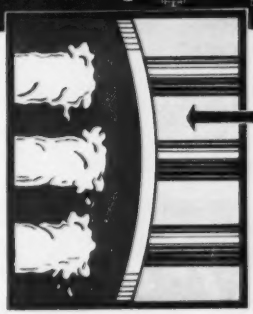
Specially Designed for the Paper Industry



HOW IT WORKS

The transverse heater baffles, which also serve as tube surface cleaners, are connected by tie rods to the yoke plate, which in turn is connected to the drive mechanism at the right. The time controls close the motor circuit at predetermined intervals. The yoke plate moves each baffle longitudinally along the tubes, until the drive mechanism reverses the action and returns the baffles to their original position.

Available in models for either manual, electric motor or hydraulic piston drive. Automatic types operate on adjustable predetermined time schedules.



BAFFLES MOVE FORWARD AND BACKWARD LEAVING TUBES CLEAN AS A WHISTLE

Patent No. 1826747
Other Patents Applied For

A BATCH OF MANUAL TYPE SELF CLEANING HEAT EXCHANGERS READY FOR SHIPMENT.

Every Inch of Every Tube Is Thoroughly Cleaned At Every Cycle!
100% Heater Capacity Available At All Times!
Standby Heating Equipment No Longer Needed!
Old Style Heater Cleaning Costs Forever Banished!

DAVIS ENGINEERING CORPORATION
1064 East Grand Street
Elizabeth 4, New Jersey
30 Rockefeller Plaza, New York 20

Newsprint, Paper Supply

(*Continued from page 61*)

Cement Co., and the Association of American Railroads, as well as several Government agencies—the Maritime Commission, the Department of Commerce (Office of International Trade), the Department of Agriculture (Forest Service Division), and the War Department for the cooperation and assistance given several of the newsprint manufacturers of Canada and the United States, at the request of the committee, in expediting the manufacture and delivery of machinery and supplies needed to increase newsprint production.

The laboratories of several of our universities, Government agencies, and private organizations have aided greatly through research and experimentation on the possible production of newsprint and other papers from such farm products as cornstalks, various straws, grasses, and other vegetable fibers. There is a strong possibility that in the not too distant future the farm lands of America may become as great a source of raw material for the production of pulp and paper as the woodlands of the continent.

Respectfully submitted

Clarence J. Brown, Chairman; Charles A. Wolverton, Paul W. Shafer, Charles W. Fursell, Lindley Beckworth, Richard F. Harless, Robert L. F. Sikes.

AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
November 27	93.0	November 29	107.4
December 4	95.4	December 6	112.1
December 11	98.2	December 13	110.1
December 18	93.9	December 20	107.2
December 25 (Revised)	74.3	December 27	74.9
January 1, '49	**71.7	January 3, '48	100.3

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
		May	106.2	Oct.	109.5		
Jan.	102.1	June	106.2	Nov.	109.3	Jan.	100.3
Feb.	105.9	July	95.5	Dec.	101.5	Feb.	99.8
Mar.	106.1	Aug.	104.2			Mar.	100.8
Apr.	105.1	Sept.	102.0	Year Avg.	104.3	Apr.	100.8
						May	100.5
						June	95.7
						July	85.3
						Aug.	‡96.8
						Sept.	‡91.8
						Oct.	‡99.1
						Nov.	‡97.3
						Dec.	‡87.1

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	97.4	90.4	87.8	88.1	89.7	101.4	104.3	96.5
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

* Indicates 1948 volume of 129,534 tons—Comparable week 1947—158,958 tons.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
November 27	89	November 29	100
December 4	93	December 6	98
December 11	96	December 13	100
December 18	75	December 20	100
December 25	87	December 27	77
January 1, '49	46	January 3, '48	78

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	100	94	81	92	91	96	94	84	

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Cut Sizing Costs

By Preparing Tub Sizings and Coatings from Raw Starch with

AMYLIQ

A Highly Purified Enzyme Product

AMYLIQ-Converted Starch Costs Less Than Modified Starch

Use AMYLIQ...Save the Difference

WALLERSTEIN COMPANY, INC. • 180 MADISON AVENUE, NEW YORK 16, N. Y.

AMYLIQ—Reg. U. S. Pat. Off.

Supplying Your Requirements

AMERICA'S LEADING INDEPENDENT WASTE PAPER PACKERS

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860 W. Evergreen Avenue • Chicago 22, Ill.

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35 East Wacker Drive
Chicago 1, Ill.

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Philadelphia 6, Pa.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED	ENVELOPE
ENGLISH FINISH	MIMEOGRAPH
LITHOGRAPH	INDEX BRISTOL
LABEL	POST CARD
OFFSET	COVER
EGGSHELL	CUP AND CONTAINER
MUSIC	FILE FOLDER
POSTER	TAG
BOND	COATED
WRITING	MACHINE COATED

KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

THE PULP & PAPER TRADING CO.

New York

21 East 40th Street — Cable: Reputation

WOOD PULP

Chemical — Mechanical

Bleached and Unbleached

Also Paper and Board

European Representative

JACOB VERSTEEGH

Stockholm Sweden

EXCELSIOR KNOX Woolen Co. Camden, Me. FELTS & JACKETS

"EXCELSIOR" FELTS

Manufacturers of Felts of Superior Quality
for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY
CAMDEN, MAINE

CLEARING HOUSE

HELP WANTED

CHEMIST or CHEMICAL ENGINEER

wanted, preferably with some experience in our field of business, which is the manufacture of pulp, paper and converted products.

After a short orientation period, the successful applicant will be given charge of the testing staff of a sub-section of the Technical Department under the general direction of the Technical Superintendent.

Our mill is part of a large and diversified organization with branches throughout Eastern Canada. The position offers excellent prospects of advancement either within the Technical Department, or into direct plant supervision, depending upon the aptitude of the man concerned.

Salary will depend upon qualifications and experience which should be stated clearly in your reply to Box 49-16, care Paper Trade Journal. J-13

MEN WANTED
POSITIONS OPEN

Mill manager to take full charge paper board mill and roofing plant; superintendent asbestos wet machine plant, also wet machine tenders; night superintendent Yankee Fourdrinier paper mill; superintendent Fourdrinier machine mill in Canada.

Graduate mechanical, electrical and chemical engineers for United States and Canada: steam, electrical and mechanical engineer large Western mill; mechanical engineers, master mechanics, designer and draftsmen; assistant plant engineers.

Salesman to sell paper makers' felts; salesman to sell chemicals for filling and coating; color mixers, cost accountant; machine tenders, one for So. America, and back tenders.

We invite correspondence (confidential) with mills seeking executives and with executives seeking new positions.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
J-13

SUPERINTENDENT WANTED

Specialty Paper Bag Plant in Greater New York City seeks man thoroughly experienced in manufacture of Printed Specialty Bags. Applicant must have ability to train and supervise working staff without sacrifice of production and workmanship. Unusual opportunity open to competent man. Send resume of qualifications to Box 49-17, care Paper Trade Journal J-27

WANTED: Comptroller Northern pulp and paper mill requires services of experienced comptroller to direct and supervise all phases of cost and general accounting in an integrated mill. Should have ten years of proven accounting experience and demonstrated ability to supervise work of others. Salary open. Write age, education, experience, general and personal qualifications, and salary expected to Box 49-13, Paper Trade Journal. J-13

HELP WANTED

Super Jobbers or Distributors having own warehouse who sell practically exclusively to Paper Jobbers and Wholesale Grocers wanted by Specialty Bag Manufacturer. We have approximately fifteen different items now being sold to jobbers. To super jobbers who qualify we offer an unusual line. Fullest co-operation extended. Box No. 49-18, care Paper Trade Journal. J-13

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

ASSISTANT to GENERAL SUPERINTENDENT—Four machine tissue mill, Fox River Valley, Wisconsin. Machine experience required. Address Box 48-813 care Paper Trade Journal. J-13

WANTED—Plant Engineer experienced on Paper Mill Machinery and capable of supervising plant maintenance. Preferably Graduate Mechanical Engineer. Give details as to age and experience. Also state salary expected. Address c/o Secretary, P. O. Box 1554, Richmond, Va. J-13

SPECIALTY PAPER BAGS—Resident mill representatives wanted for Eastern manufacturer. State territory, experience and present connections. Address Box 49-19 care Paper Trade Journal. J-27

SITUATIONS WANTED

SITUATION WANTED—Salesman with following qualifications: 2 years college; 5 years general experience in large paper mill before war; 3 years calling on mills in midwest in sales capacity; 32 years of age. Now employed but desire change. Excellent references. Reply Box No. 49-24, care Paper Trade Journal. J 20

PLANT MANAGER—Thorough experience in converting paper and boards; wants change to position offering better opportunity. Excellent production and labor relations background. Address Box 49-15 care Paper Trade Journal. J-27

TECHNICAL DIRECTOR—Age 36—14 years experience Paper—Board Mills and Converting, Production, Technical Control, Cost, Development. Available for position as Technical or Production Manager. Now employed. Box 48-807 care Paper Trade Journal. J-20

PAPER CHEMIST—four years experience with adhesives in converting operations and two years experience in development work for a bag mill. Address Box 49-22 care Paper Trade Journal. J-27

SITUATIONS WANTED

MILL SUPERINTENDENT—Thorough experience in specialties and tissue grades. Good knowledge of pulp preparation. Excellent production and labor relations background. References. Address Box 48-805 care Paper Trade Journal. J-20

COMPTROLLER specializing in costs and systems invites confidential correspondence regarding change of position. Experience all types of paper and bag manufacturing. Minimum salary $7500.00. Address Box 48-808 care Paper Trade Journal. J-13

SUPERINTENDENT available at once. Thoroughly experienced on all grades of cylinder made folding box and test liner, also Fourdrinier Kraft board and specialties. Capable of producing quality and production at minimum cost. Address Box 48-815 care Paper Trade Journal. J-13

MILL MANAGER—GENERAL SUPERINTENDENT—Well rounded experience in executive, technical and operating capacities—pulp and paper industry—M.I.T. graduate—Chemical Engineer. Available immediately. Anywhere in U.S.A. Address Box 49-16 care Paper Trade Journal. J-13

EXECUTIVE with over twenty years experience in all phases of specialty bags and envelopes, cellophane, glassine, combination, as well as non-transparent papers. Administration—production—promotion—sales management. Address Box 49-6 care Paper Trade Journal. J-13

LAMINATING — Experienced man several years in charge of modern laminating plant laminating greaseproof glassine checkbook covers and other specialties, is seeking new connection. Can get results. Address Box 49-14 care Paper Trade Journal. J-20

AVAILABLE, GENERAL OR SALES MANAGER, PAPER MILL, CONVERTING, or WHOLESALE COMPANY. Twenty years concentrated experience in papermaking, converting and wholesaling. Thoroughly experienced general management, mill and warehouse operation, union negotiation, purchasing, turnover, inventory control, sales training and sales force supervision. Unusually high personal selling record. Excellent mill and wholesale contacts throughout country. Locality no object. Reliable Protestant family man. Address Box 49-20 care Paper Trade Journal. J-13

SUPERINTENDENT—Practical Paper Maker with engineering background, with ability to upgrade and increase production. Accustomed to handling modern, high speed cylinder paper machines. Address Box 49-21 care Paper Trade Journal. J-27

SUPERINTENDENT or ASSISTANT SUPERINTENDENT with twenty-four years experience manufacturing better grades of folding boxboard and test liner. Now employed. Available in thirty days notice. Best references. Address box 49-23 care Paper Trade Journal. J-13

MECHANICAL ENGINEER—Age 30—Desires position offering better opportunity—Experience in paper machinery design, erection, mill maintenance and operation. Presently employed by consulting engineer. Address Box No. 49-25 care Paper Trade Journal. J-20

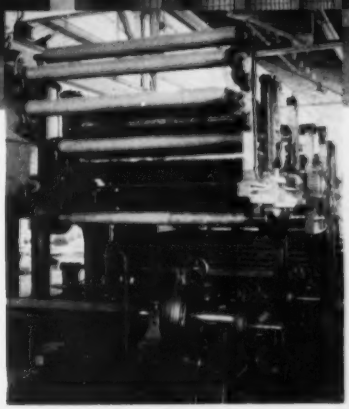
FOR SALE

FOR SALE

Priced for quick disposal

1—42" Waldron Coating Machine for lacquer coating, waxing, hot melt, oiling from continuous web. 10 H.P. high pressure boiler, 5 H.P. 440 V motor reeves drive. Address Box 49-26 care Paper Trade Journal. J-13

VIEW OF EXPANDED DILTS PLANT



NOW AVAILABLE THROUGH DILTS

Here is the present Dilts line-up and it is growing fast—

CONVERTING EQUIPMENT

Machines—Laminating (Asphalt, starch, etc.), Waxing (Roll-fed, Dilts Miami Lo-Type waxing mach.), (Sheet-fed), Gumming, Creping, Coating, Saturating, Carbonizing, Specialty mach.

Pasters—Roll-fed, Sheet-fed

Water Finish Attachment (Miami)

Unwinders

Rewinders

STOCK PREPARATORY EQUIPMENT

Agitators, Propeller Horizontal, Vertical

Beaters—Rag beaters, Hi-speed hollow midfeather beaters, Broke beaters, Breaker beaters, Laboratory beaters

Bars, beater

Bed Plate, Beater

Chests, all metal vert. & horiz.

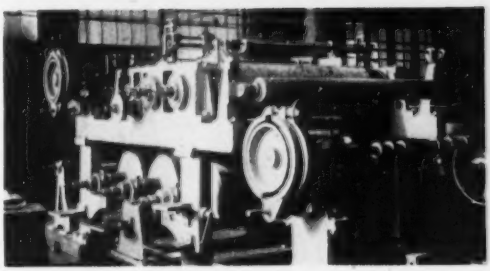
Classifiners

Drubbers

HYDRAFINERS

Hydrapulpers

Hydracycle Tanks



Dilts MACHINE WORKS, FULTON, NEW YORK

PARTIAL VIEW OF LABORATORY AT DILTS

SHARTLE BROS. MACHINE CO., MIDDLETOWN, OHIO
B-C INTERNATIONAL, LONDON, ENGLAND
Divisions of THE BLACK-CLAWSON CO., Hamilton, Ohio
Associate: Alexander Fleck Limited, Ottawa, Canada

FOR SALE

POWER REAM CUTTERS

New 44" National Automatic Clamp Power Cutters, with A.C. motors — carried in stock, ready immediate shipment.

Also specializing in the New 36" National Hydraulic. Send for full details on this new smooth-running machine.

THOMAS W. HALL COMPANY, INC.
Stamford, Conn.
(N. Y. Sales Office: 120 West 42nd St.)
Also rebuilt Sheeters, Slitters, and Rewinders.

FOR SALE

2—36" Friction Calenders
1—30" Friction Calenders
1—42" Super Calenders
10—45" Face Engraved Embossing Rolls, Very desirable patterns.
1—74" Waldron Double Coater (Wet end only)
1—84" Waldron Double Coater (Wet end only)
1—52" Brush Finishing Machine

Will accept any reasonable offer, address inquiry to Box No. 49-4, care Paper Trade Journal. J-20

FOR SALE

1—96" Cameron slitter and rewinder —type 18—100" drums—new machine (never used)—including type "C" constant web tension mill roll unit—rewind capacity 72" diameter.

J. J. ROSS COMPANY
250 Frelinghuysen Avenue,
Newark 5, N. J.
Bigelow 3-3720

J-13

FOR SALE

BARKERS
1—5' Carthage Disc Barker

BEATERS
3—1000 lb. Dilts Beaters—Iron Tub.
1—600 lb. Beater—iron tub.

BRASS FELT ROLLS
9—4" diameter x 140" face (with bearings)

BREAST ROLLS
1—100" x 14".
8—114" x 14"
1—120" x 14"

CALENDER STACK
1—72" 5 roll Calendar Stack.

CRUSHERS
1—18" x 18" Jeffrey Single Roll Crusher

CYLINDER MOULDS
1—36" diameter x 80" face.
1—30" diameter x 72" face.
1—36" diameter x 79" face.
1—42" diameter x 88" face.

DECKER
1—Decker—48' diameter x 84" cylinder mold (New).

DRIVES
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—Cleveland Worm Drive. Ratio 10 to 1.
1—Smith & Winchester mortise gear Drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2:16 to 1. 900 RPM.
1—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1)
2—Smith & Winchester Mortise Gear Drives with 26" diameter clutches—Ratio 8 to 1.

DRIVES (Angle)
1—General Machine Company 16 : 1.
1—Philadelphia 50:1 — 1 h.p. — 1200 r.p.m.
2—Philadelphia 21½:1 — 3 h.p. — 1200 r.p.m.

V-BELT DRIVE
(1—81¾" diameter x 7½" face, 5 groove
(1—16½" diameter x 7½" face, 5 groove
(With clutch).

DRYERS
9—36" diameter x 76" face.
1—48" diameter x 60" face with bearings
1—48" diameter x 91" face.
1—48" diameter x 94" face.
8—85" x 120"(Baby Dryers).
2—36" x 143".
1—24" x 130".

DRYER SECTION, etc.
5—Dryers, 36" diameter x 75" face.
1—Baby Dryer.
Including frames, bearings, steam joints, gears, felt rolls, press rolls with stands and bearings.

FLAT SCREENS
2—12 Plate Murray Dunbar Flat Screens.
1—8 plate Packer Type Flat Screen.
1—6 plate Shartle Flat Screen

FORK TRUCK
1—Lewis Shepard Fork Truck (Height of lift 109", capacity 3000 lbs.)

HYDRAULIC PRESS
1—Watson-Stillman Co. (Platen 24" x 24")

JORDANS
1—Noble & Wood. Pony Monarch Belt Driven.
2—Noble and Wood—Mammoth Type

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
2—5 h.p. ball bearing—splash proof motors —3/60/440. 1160 r.p.m.
1—½ h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.
1—2 h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.

PRESS ROLLS
Various sizes.

PULLEYS
Various cone and assorted pulleys.

PULP STACKER
1—Link Belt Company Pulp Stacker, 30 ft. conveyor, 2½ ft. wide, self propelled, with motors

PULPER
1—Jones Pulper. Complete with motor and drive.

PUMPS
2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head —including motor.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REEL
1- 72" Beloit Reel.

ROLLS
800—Brass tube-steel tube—rubber covered iron rolls—various sizes.

SAVEALL
1—#5 Bird Saveall.

SCREEN PLATES
20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock

SHEETER
1—136" Moore & White Sheeter, duplex. with layboy.

SLITTERS AND WINDERS
1—72" Cameron—Type 10-10A.
1—62" Cameron—Type 10-10-AJ.
1—42" Cameron—Type 28-8-7 (shear cut)
1—72" Cameron—Type 28-8-7-D (shear cut)
1—42" Cameron—Type 40-4-B.
1—42" Cameron—Type 24-2A
1—50" Cameron—Type 24-2L
1—42" Cameron—Type 9-5
1—56" Cameron—Type 24-2A.
1—30" Langston.
1—42" Cameron Constant Tension, with pneumatic control

SQUEEZE ROLLS
2—Rubber Squeeze Rolls, 20¾" diameter x 102" face.

STOCK PUMPS
1— 16 x 20 Shartle Duplex
4—7 x 16 Shartle Duplex.
Numerous other Centrifugal Stock Pumps Advise as to your requirements.

SUCTION COUCH ROLLS
1—Sandusky 14⅞" diameter x 103" drilled face.

SUCTION PRESS ROLLS
1—Downingtown Suction Press Roll 16" diameter x 66" drilled face.

TRIMMER
1—56" Smith & Winchester—Undercut.

TURBINE
1—150 h.p. Westinghouse Type C-Gear Turbine (Recently rebuilt).

VACUUM PUMPS
1—Sandusky 8 x 10.

WAXING MACHINE
1—62" Mayer Waxing Machine.

YANKEE DRYERS
1—8' diameter x 173" face

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurs, Treas.

250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J.

TELEPHONE
HUMBOLDT 2-2177

CABLE ADDRESS: JACKROSS

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

1—Pusey & Jones 120" Fourdrinier Paper Machine, complete with enclosed drives, ball bearing wet end with suction press and suction couch, 60" diameter dryers, 3 calender stacks and winders.
1—Moore & White 62" Fourdrinier Machine Complete.

BEATERS

1—750 lb. Horse Iron Tub. Roll 60" x 60".
2—Valley Iron 750 lb. Iron Tub—Bronze filled.
1—Valley Iron 2000 lb. Beater Roll—66" x 60" —with perforated back fall. Iron tub.
1—E.D. Jones 2000 lb. Beater Roll—62" x 60". Iron tub and bottom.

BLOWERS

1—American Sirocco Size 4.
2—American Blowers #306.
1—American Blower #700.
1—American Blower #750.
3—Buffalo Forge Co. #24 Cast Iron Blowers.

CALENDER ROLLS

6—110" face x 9½" diameter.
4—104" face x 9¼" diameter.
3—104" face x 12½" diameter.
32 Rolls—various sizes.

CALENDER STACKS

1—104" face 5 roll stack, with drive.
1—76" face 7 roll with drive.
1—76" face 3 roll with drive.
1—112" face 7 roll.

CONVEYOR

1—18½ ft long x 30" wide—with motor.

COUCH ROLLS—BRASS

1—104" face x 18" dia.
1—118" face x 16" dia.
1—150" face x 16" dia.
1—92" face x 19½" diameter.
2—94" face x 21¾" diameter.

COUCH ROLLS—RUBBER

1—110" face x 20" dia.—New.
1—139" face x 19" dia.
1—141" face x 21" dia.

CYLINDER MOLDS

1—IMPCO 10" diameter x 84" face.
3—36" diameter x 130" face Cylinder molds with vats, couches—ball bearing.
2—74" face x 38" diameter.
1—134" face x 36" diameter, with stainless steel shafts.
1—78" face x 36" diameter.

CYLINDERS AND VATS

2—136" face x 56" dia.—with vats, couch, save plate.

DRIVES

1—6C. Reeves Drive.
1—New Reeves 4343—C-18 with 2 h.p. 220-440 volt G.E. Motor.

DRYERS

1—74" face x 28" diameter with gears.
5—143" face x 48" diameter.
1—124" face x 48" diameter.
6—80" face x 36" diameter.
1—77" face x 48" diameter—with gear.
1—64" face x 36" diameter.
10—78" face x 36" diameter, complete with 2 deck frames, gears, bearings and steam joints. Drives, line shaft and felt rolls are available.
1—78" face x 18" diameter with gears and bearings.
2—46" face x 24" diameter—chromium plated.
1—120" face x 16" diameter—Baby Dryer.
34—128" face x 48" diameter.
11—64½" face—36" diameter with 2 deck frames, gears and bearings.
3—63¾" face—36" diameter—bearings and gears.
2—62¼" face—36" diameter—bearings and gears.

EMBOSSER

1—Waldron 48"—ball bearing—complete.

EXTRACTOR ROLLS

1—Downingtown—44" face x 17" diameter.

FLAT SCREENS

5—10 plate Sandy Hill.
1—Sandy Hill 8 plate—with scraper.
1—New Sandy Hill 12 plate, with scrapers and V-belt drive.
1—Montague 6 plate—ball bearing.

FOURDRINIER SECTIONS

1—P & J 156" x 80 ft. ball bearing. Complete from inlet to 22" diameter suction couch. Brass and Rubber covered table rolls. 6 Brass Suction Boxes operated at 1000 per minute.
1—M & W 62" x 49' complete with 3 suction boxes, shake, 3 suction presses and size press.

HAMMERMILLS

—American Hammermill—37" ball friction bearing equipped.

HEAD BOXES

1—118" Bronze Lead Lined. Sweet.

INLETS

1—Voith Inlet for 151" wire with 28" slice. Complete, including drive.

JORDANS

—Jones Standard—ball bearing direct connected to 150 h.p. G.E. 440 volt motor.
—#3 Miami, for motor drive.
—Jones Standard for V-Belt Drive.
1—Jones Majestic, roller bearing—stainless steel filling—for motor drive.
1—Jones Majestic with base and couplings—bronze filled. 2 sets of new bronze fillings.
2—#3 Appleton with base and coupling—bronze filled.
1—Dillon Horse #3—direct connected 75 h.p. Stainless steel ¼" filling.
1—#4 Smith & Winchester—Ball bearing.

LABORATORY EQUIPMENT

1—12" 6 roll calender stack with Westinghouse ½ h.p. motor.
1—New E. D. Jones 17# iron tub beaters, stainless steel fillings.

MOTORS

1—Fairbanks Morse — 30 h.p. — 490 r.p.m. 220-440 Volt.
1—Reliance 25 h.p. ball bearing, 850 v., 3 phase, 60 cycle—1750 r.p.m.
1—Reliance 25 h. p., ball bearing, 440 v., 3 phase, 60 cyc., 1750 r.p.m.
1—General Electric 150 h.p.—440 v.—3 phase—60 cycle—600 r.p.m.

PRESS ROLLS

1—110" face x 13" diameter—rubber.
1—101" face x 18½" diameter—rubber.
1—123½" face x 17½" diameter—rubber.
1—112" face x 18" diameter—rubber.
1—127" face x 17½" diameter—brass.
1—117" face x 24" dia.—Brass.
1—84" face x 20" dia.—Rubber.
1—178" face x 22" dia.—Rubber.
2—118" face x 21" dia.—Rubber.
1—147" face x 11¾" dia.—Rubber.
1—74" face x 18" diameter—Rubber.
1—109" face x 17" diameter—Rubber.
1—136" face x 22" diameter—Brass.
1—102" face x 16" diameter—Rubber.
1—119" face x 17" diameter—Brass.
1—76" face x 10" diameter—Brass.
1—53" face x 14" diameter—Brass.
1—53" face x 12" diameter—Iron.
1—55" face x 10" diameter—Iron.
1—74" face x 16" diameter—Iron.
1—73" face x 14" diameter—Iron.
1—102" face x 18" diameter—Brass.

PULP EQUIPMENT

1—Jigger—1 deck—vibrating screen.
1—Mitts & Merrill #12 Pulpwood chipper.
1—5' Carthage Disc Barker.
1—60" Carthage Ball Bearing Chipper—4 knife.
2—New Stedman Disintegrators—56".

PULPERS

1—Bird Pulper.
2—#2 Lamson Pulpers.

PUMPS

1—Worthington Monoblock—250 g.p.m.—130' head —direct connected to 15 h.p.—3500 r.p.m.—220/440 volts, totally enclosed, ball bearing motor.
1—Ingersoll Rand—50 g.p.m.—210' head—direct connected 7½ h.p.—220-440 volt—3 phase—60 cycle totally enclosed motor.
1—New Warren—all bronze, 30 g.p.m.—40' head —connected to 1¼ h.p.—440 volt motor.
1—Ingersoll Rand 150 g.p.m.—250' head—connected to 5 h.p. motor—220/440 volt motor.
1—Worthington—2600 g.p.m.—230' head.
1—Worthington 3 x 4—300 g.p.m. 75' head—1750 r.p.m. Ball bearing for motor drive.
1—French Marine ball bearing. 500 g.p.m.—800' head.
3—6" x 6" B & C Open Impeller Bronze Pumps —belt drive.

PUMPS—OPEN IMPELLER

1—Morris open impeller—8" suction—8" discharge —belt drives.
1—Morris Vertical Open Impeller 6 x 6—350 g.p.m. 3 percent stock—50' head—connected to G.E. 15 h. p. 220-440 volt 3 phase—60 cycle—1165 r.p.m.
5—New Gould's—ball bearing—6" suction—4" discharge—780 g.p.m.—80' head. Requires 20 h.p. at 1750 r.p.m.
5—New Gould's—ball bearing—6" suction—6" discharge—1500 g.p.m.—45' head. Requires 23 h.p. at 1150 r.p.m.
3—New Gould's—ball bearing—6" suction x 4" discharge—600g.p.m.—80' head. Requires 15 h.p. at 1750 r.p.m.
3—New Gould's—ball bearing—8" suction—8" discharge—1200 g.p.m.—60' head. Requires 20 h.p. at 1150 r.p.m.
3—New Gould's—ball bearing—8" suction—8" discharge—1000 g.p.m. 40' head. Requires 20 h.p. at 1150 r.p.m.

REELS

2—Beloit 110" two bowl Reel.
1—Pusey & Jones 78"—2 bowl reel.
1—M & W 76" 2 bowl reel.

ROTARY KNIFE CUTTERS

3—Sprout Waldron Cutters Type F-11 30" knives—used 30 days.

ROLLS

200 Assorted felt carrying.
50—Brass, Chromium Plated, Ball Bearing 9" Base x 12" Diameter.
11—Brass 128" face x 11" diameter.
1—Brass 140" face x 12" diameter.
1—Brass 130" face x 12" diameter.
1—Brass 120" face x 15" diameter—ball bearings.

ROTARY SCREENS

3—Jones Leitzwalk—cylinder 84" face x 28" diameter.
9—2A Bird—Copper Vats.
1—23A Bird Rotary—copper vats—with motors —used less than 1 year.

SCREW PRESSES

3—Valley Voith Screw Presses Size 2A, with new spare sets of plates.

SHEETERS

1—Hamblet 130" heavy duty—with 12 roll back stand and motor.
3—Hamblet 81" Single Knife with 6 roll back stands and motors.
1—Hamblet 81" Single Knife with 6 roll back stand and motor.
1—Hamblet 100" duplex with 4 pile Erie Layboy.

SHREDDERS

3—Sprout Waldron Cutters — type F-11 — 30" knives. Used 30 days.

SLITTERS AND WINDERS

1—40" Kidder Slitter and Rewinder.
3—Pusey & Jones 100" high speed slitters and rewinders.
1—Cameron 52" type 8 Model 5A with friction tensions.
1—78" 2 shaft Manning Winder.
1—78" 2 drum winder.
1—Cameron 60"—Model 6.

STUFF PUMPS

1—Beloit 10 x 20 triplex—with motors and chain drives.
1—Sharlis 7 x 10 Triplex.

SUCTION COUCH ROLLS

1—Millspaugh 22" diameter x 1394" suction face.
1—Millspaugh 22" diameter x 158" drilled face.

SUPER CALENDERS

1—9 roll 120" face.
1—9 roll 92" face.
5—7 roll 62" face.
1—7 roll 65" face.
1—7 roll 56" face.

TRIMMERS

1—36" Universal Trimmer.
1—32" Dexter.
1—Baybold 84" with motors.

VACUUM PUMPS

1— 4 Nash Hytor.
2—Nash—2AH.
1—Nash L2.

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

FOR SALE

BEATERS
1—Iron tub 84x84 Shartle breaker
1—Dilts high speed with roll 36x48

CUTTERS
1—138" Morne duplex with duplex layboy
1—108" Hamblet duplex with duplex layboy
1— 84" Clark single with layboy
1— 84" Clark single with layboy
1— 76" Clark
2— 48" Hamblet

DRYERS
1—12 ft. x 100" Yankee
1—12 ft. x 130" Yankee
2— 8 ft. x 174" Yankee
5— 8 ft x 174"
4—48 110"
2—48 x 186"
1—48 x 80"
16—36 x 65"

FOURDRINIER PARTS
1—Wire 56" x 110" anti friction with 18" suction couch and three sets presses, rolls 28 x 108".
1—108" Fourdrinier Part with 30" suction couch, 20" diameter breast roll, 8" diameter table rolls.

JORDANS
1—No. 2 Appleton, anti friction, with 150 HP motor
1—No. 5 Miami, anti friction
1—No. 2 Dillon
3—Noble & Wood Pony

MOULDS
1—36 x 125"
1—60 x 84"
1—48 x 84"
1—36 x 84"

PAPER MACHINE
1—108" trim combination machine
1—94" trim facial tissue and M G machine with 6" dia. Beloit dryer
1—84" Fourdrinier paper machine

PUMPS
2—12 x 12 Gould triplex
1—10 x 20 Shartle duplex
1— 7 x 10 Gould triplex

SCREENS
2—No. 3 Bird
Flat screens, 3 to 16 plate
Leith Walk and Moore & White rotary

SLITTERS
1—234" Rice Barton
1—150" Moore & White four drum
1—150" Warren two drum
1—130" and one 128" Pusey & Jones two drum
1—112" Kidder
1— 62" Langston
1— 56" Cameron
1— 52" 44 W Cameron

SUCTION ROLLS
1—30 x 100" Couch
1—62 x 100" Press
1—28 x 104" Couch
1—18 x 148" Couch
1—18 x 92" Couch

ELECTRIC TRUCKS
1—Baker electric truck, model D T O
1—Walker electric highway truck, 4000 lb. Capacity, Model 42 with generator
1—Automatic tractor and piler

FRANK H. DAVIS CO. 175 Richdale Ave., Cambridge, Mass. TF

FOR SALE

FOR SALE

1—102" Cameron Slitter and Winder Type 18. 100" drum. Rewind capacity 60" diameter.

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Tel. Bigelow 3-3720
J-13

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Paper Power Cutters; Slitters & Rewinders; Tie Cutters; Printers; Scorers & Creasers; Gluers & Wrappers; Coaters; Laminators; Waxers; Stitchers; Brightwoods.

Write for latest bulletin listing available paper box & paper converting machinery. Get on our permanent mailing list for up-to-date inventory.

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TF

FOR SALE

1—64" Waldron coating machine—including winder, festoon drier equipment and new Ross drier.
1—54"—Waldron wall paper type coater—including winders and festooning equipment—six color machine.
1—50"—Groehl and Hoelz brush type coater—including re-winder and festooning equipment.
1—54"—Textile Machinery Co. 7-roll Super Calender—roller bearings top and bottom.

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FOR SALE

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300 Ton Hydraulic Press—for overissue news—30 x 40" platen—48" daylight—48" travel per minute—2 rams.

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Telephone Flushing 7-9284 J-27

TUBE & CORE MACHINERY FOR SALE BARGAINS

1—Langston Single Belt Spiral Paper Tube Winder & Cut-Off saw, one glue pot, suitable for toilet cores and other uses $2000.00
1—38" Board Slitter & Rewinder Shear Cut $1250.00
1—Knowlton S. B. Winder complete 2 glue pots $2750.00
Extra glue pots, etc. etc.

Many other items Tube Machinery

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111 W. Washington St., Chicago, Ill.
R.A. 6-3558
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PAPER COATING MACHINERY—Waxing, Oiling, Carbon, Laboratory Coating and Treating Machines. New improvement. MAYER MACHINE COMPANY, Inc., 1313 Buffalo Road, Rochester 11, N. Y.

FOR SALE—78" Hamblet Sheeter, with layboy and Back-stand. Immediately available. Address Box 49-27 care Paper Trade Journal. J-20

FOR SALE—1—Used Beloit Duplex Cutter 140" complete including Reeves Drives, Delivery table and Drop Box. In good condition. Can be seen in operation prior to January 25. Address replies to American Coating Mills, Division Owens-Illinois Glass Company, Elkhart, Indiana. J-20

WANTED

WANTED

150" trim high-speed Winder with slitter attachment. Drive to be on right-hand side viewed from front of machine. Must be in good condition. Principals only. Address Box 48-784, care Paper Trade Journal. J-13

WANTED

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Mill contracts for 49&50/ desired. Quote best price, F.O.B. New York or mill. Starting immediately. Also all details & terms. 250 tons per month available for 49 /. Write now, wire, phone offers & needs.

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CABLES: SALESINTER, N. Y.
J-13

WANTED: Bird Saveall. Advise size of cylinder, condition and price. Address Box 49-26 care Paper Trade Journal. J-13

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers, Address Box 48-223 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine. Address Box 48-224 care Paper Trade Journal. TF

PAPER MANUFACTURER desire to purchase or invest in converting business of standard paper products. Address Box 48-222 care Paper Trade Journal. TF

WANTED TO BUY—Second hand paper towel machine for making rolls of 150 sheets, 7½ x 11. Address Box 48-821 care Paper Trade Journal. J-13

WANTED TO BUY—A Bauer-McNett Fiber Classifier. Contact: R. Aument, American Box Board Co., Grand Rapids, Michigan. Telephone 94581. J-27

WANTED—Used hard fibre CORE CUTTER for 3" diameter cores—48" or wider. For converter use. Address Mr. J. Heller, Milprint, Inc., Milwaukee 1, Wisconsin.

WANTED—INTERESTED in purchasing minimum 150 tons up to 300 tons Jumbo Rolls for toilet paper manufacturer. Submit prices, samples and advise delivery. Address Box 49-29 care Paper Trade Journal. J-13

CLASSIFIED ADVERTISING BRINGS RESULTS

FOR SALE

1—96" Board Machine with Five (5) Cylinder Wet End.
2—Main Presses
3—Primary Presses
40—Dryers
2—Calender Stacks
1—Two (2) Spool Reel
1—Two (2) Drum Winder
6—Angle Drives

1—90" Board Machine with Seven (7) Cylinder Wet End.
2—Primary Presses
3—Main Presses
Stack Dryers
2—Calender Stacks
1—Two (2) Spool Friction Reel
1—Langston Rewinder

1—96" Fourdrinier Paper Machine complete with:
Size Press
2—Main Press Sections
23—Dryers
9—Roll Calender Stack
Reel
Single Drum Winder
Drives
#2 Bird Screen with Dirtec attachment.

1—110" Moore & White Fourdrinier designed for
109" x 49'6" Fourdrinier Wire
First Press Section
Second Press Section

2—2000# Dilts Beaters with Keyed Type Roll.

1—E. D. Jones 67" x 60" Beater Roll complete with 2000-2500# Tub.

2—55 x 52 Beater Rolls complete with 1200-1500# Tubs.

1—44 x 44 Beater Roll Newly Filled.

1—Sturtevant Bale Pulper complete with conveyor, speed reducer, etc.

1—Noble & Wood Pony Monarch Jordan.

2—Emerson No. 1 Jordans.

1—Jones Imperial with New Bahr Fillings.

1—Miami No. 2 Jordan with New Bahr Fillings.

1—Noble & Wood Mammoth Jr. with NEW Fillings.

1—Shartle High Speed Refiner, antifriction brgs.

1—Cast Iron End Vat with 36" Dia. 96" face Mould.

1—42" Dia. x 84" Face Cylinder Mould.

1—36" Dia. x 76" Face Hollow Shaft Mould.

1—Moore & White 110" Four drum Winder complete.

1—Moore & White Layboy 102" four pile, three section complete with Maxon automatic counter #90.

1—Two Spool 110" Reel.

1—Two Spool 96" Reel.

5—48" x 160" Pusey & Jones Dryers.

23—NEW 36" x 84" Moore & White Dryers.

10—36" x 84" Dryers.

13—36" x 68" Rice Barton Dryers.

1—Stack six (6) Dryers 104" face.

2—Vickery Felt Conditioners: 1—85" & 1—110".

1—NEW 13" x 90" Millspaugh Suction Couch Roll (Never Installed).

1—18" x 110" Millspaugh Suction Couch Roll.

1—Brass Press Roll 18" x 102".

1—Brass Breast Roll 20" x 170".

2—NEW Rubber Covered Couch Rolls 20" x 96" with 1½" of Rubber 200-225 Plastometer.

3—Rubber Covered Couch Rolls 16" x 85".

1—Rubber Covered Couch Rolls 16½" x 173" face, 1½" soft rubber.

1—Rubber Covered Press Roll 25" x 167" face.

1—Rubber Covered Press Roll 27" x 148" face over 1" NEW rubber.
All sizes of plunger and Centrifugal Stock Pumps.

"Every Pound of Paper is Made on Used Equipment"

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LANGSTON

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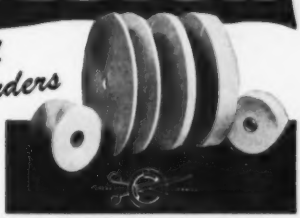

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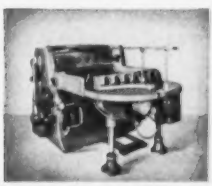

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in custom-built paper and paper bag machinery for high speed operation, large volume production and lower costs. Write for bulletins.

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STAINLESS STEEL CASTINGS
for all equipment exposed to corrosion by sulphite acids or other corrosive agents
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- NEW HIGH SPEEDS
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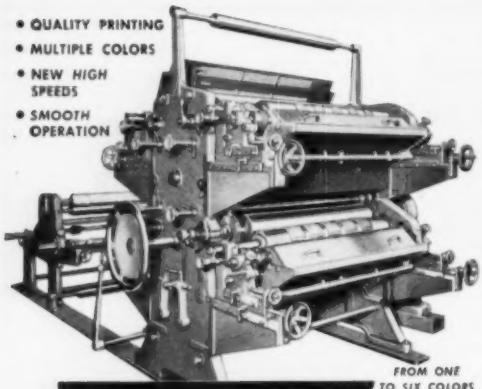

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New designs and new presses to meet every production demand. Widths from 10 to 100 inches with from one to six color printing. Illustrated, is 4 color stack type press with center shaft rewind. Many other models now available. Write for further information.

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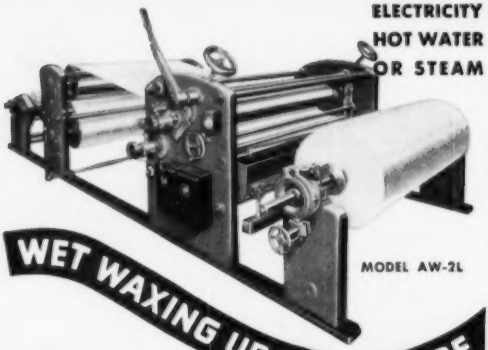
OR STEAM



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A new model Wet Waxer . . . featuring compact construction, functional flexibility of use, high speed, and electric, hot water or steam heating. Built in widths from 10 to 80 inches. Other models available for dry or contact waxing. Write for further information.

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For fast unloading and handling of pulpwood, for symmetrical stacking or rehandling from corded piles—you'll find the size and type you need in this new Bulletin on—

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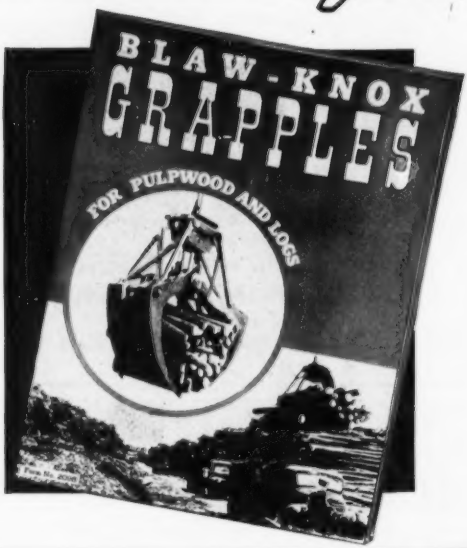

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Abrasives
Monsanto Chemical Co.
Nopco Chemical Co.
Norton Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division

Adhesives
American Anode Incorporated
American Paper Mchy. & Engrg. Works, Inc.
Arabol Mfg. Co.
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
Glidden Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Co.
National Starch Products Inc.
Nopco Chemical Co.
Philadelphia Quartz Co.

Agitators
American Well Works
Appleton Machine Co.
The Biggs Boiler Works Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
General American Transportation Corp.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Warren Steam Pump Co., Inc.

Alloys
Michigan Steel Casting Co.
The Midvale Company

Apron Cloth
Williams-Gray Co.

Asbestos Products
Raybestos-Manhattan Inc., Manhattan Rubber Division

Bag Machines
Potdevin Machine Co.
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

Barkers and Chippers
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

Bars
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Bearings
Black-Clawson Company
Jones, E. D., & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

Beaters & Jordans
American Paper Mchy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
The Midwest Fulton Mch. Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Bed Plates
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld
Shartle Brothers Machine Co.
Valley Iron Works Co.

Belting
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
J. E. Rhoads & Sons

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E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

Bleaching Boilers, Rotary
The Biggs Boiler Works Co.

Bleaching Apparatus
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E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Pennsylvania Salt Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

Boilers
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Company

Bottoms
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

Brush Rolls
M. W. Jenkins Sons, Inc.

Brushes
M. W. Jenkins Sons, Inc.

Bursting Testers
B. F. Perkins & Son Inc.
Testing Machines, Inc.

Calenders
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

Carrier Rope
Williams-Gray Co.

Casein
American Cyanamid Co., Industrial Chem. Div.
Hercules Powder Co., Inc.

Castings
American Cast Iron Pipe Co.
Appleton Machine Co.
Babcock & Wilcox Co.
Black-Clawson Company
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Frederick Iron & Steel, Inc.
Hamblett Machine Co.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Midvale Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Yes, it's possible to get smooth "fuzzless" surfaces, to put crackle and snap into a sulphite bond, without rags. PQ Silicate by chemical reaction with alum in the beater catches the short fibres which ordinarily slip through the wire. The result is a smooth, "pickless" surface. The rattle and snap of the silicated sheets, you can both feel and hear.

The use of PQ Silicate in the beater can be easily adapted for other types of paper. Have a PQ Silicate specialist help you with a quality problem.

PHILADELPHIA QUARTZ COMPANY
1146 Public Ledger Building, Philadelphia 6, Pa.

PQ SILICATES OF SODA

Let us also share our "know-how" on improving the quality of raw water and increasing white water recovery with N-Sol Process (activated silica sol).

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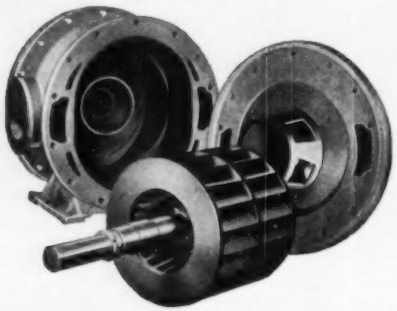

NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

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Special Grades for Beater, Calender and Tub Sizing

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SERVICE

CLINTON INDUSTRIES, INC.
CLINTON, IOWA

Smith & Winchester Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

Centrifugal Machinery

Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

Chains

Chain Belt Company
Link Belt Company

Chemical Cotton Pulp

Hercules Powder Co.

Chemicals

Adell Chemical Co.
Alhydro, Inc.
American Anode, Incorporated
American Cyanamid Co., Industrial Chem. Div.
Ansul Chemical Co.
Buffalo Electro-Chemical Co., Inc.
Calco Chemical Co.
Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
Gottesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Mallinckrodt Chemical Works
Monsanto Chemical Company
The Mathieson Alkali Wks., Inc.
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Witco Chemical Co.
Wyandotte Chemical Corp.

Chests

Kalamazoo Tank & Silo Co.

Cleaning Materials

Adell Chemical Company
Amer. Cyanamid & Chem. Corp.
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

Clutches

Appleton Machine Co.
Black-Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works

Coating Machinery

Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

Coating Materials

American Anode Div., The B. F. Goodrich Chem. Co.
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
The Goodyear Tire & Rubber Company
Monsanto Chemical Company
Nopco Chemical Co.

Where

Cogs

The N. P. Bowsher Co.

Compounded Latices

American Anode Div., The B. F. Goodrich Chem. Co.

Compressors

Allis-Chalmers Mfg. Co.
Ingersoll-Rand Co.
Nash Engineering Co.

Consistency Regulators

Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

Consulting Engineers

Birk, F. Paul
Frederic C. Clark Associates
Ebasco Services
Frank W. Egan & Co.
Ferguson, Hardy S.
C. M. Guest & Sons
Hardy, George F.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
The MacPherson Company
Roderick O'Donoghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.
John Waldron Corp.
H. G. Weber & Co., Inc.
Frederick Wierk

Controllers

Black-Clawson Co.
The Bristol Co.
The Brown Instrument Co.
Cochrane Corp.

Controls

The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Johnson Corp.
Stickle Steam Specialties Co.

Conveyors

American Well Works
Black-Clawson Company
Chain Belt Company
Frederick Iron & Steel, Inc.
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

Core Cutters

Suburban Machine Co.

Cores

Elixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

Couplings

Black-Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

Cranes

Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

Cup and Container Machines

Mercury Engrg. Corp.

Cutters

Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

to Buy

Cylinders
M. W. Jenkins Sons, Inc.

Dampeners
Perkins & Son, Inc., B. F.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Valley Iron Works Co.

Deasphalting Chemicals
Adell Chemical Company

Deckle Straps
Stowe Woodward, Inc.

Deckle Webbing
Williams-Gray Co.

De-Inking
Adell Chemical Company
Buffalo Electro-Chemical Co., Inc.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co

Deinking Chemicals
Adell Chemical Company
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Philadelphia Quartz Co.

Densometers
W. & L. E. Gurley

Design Construction
Ebasco Services

Detergents
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Dewaxing Chemicals
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.

Digesters
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
General American Trans. Corp.
Lukenweld
Pusey & Jones Corp.

Dispersing Agents
Adell Chemical Company
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.

Doctors
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Doctor Blades
Bird Machine Company
Black-Clawson Company
Lodding Engrg. Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Driers
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
The Youngstown Welding & Engrg. Co.

Drives
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Syco Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

Dryer Drainage
Stickle Steam Specialties Co.

Dusters
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

Dusting Brushes
M. W. Jenkins Sons, Inc.

Dyestuffs
American Cyanamid Company, Calco Chemical Div.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.
C. K. Williams & Co.
Witco Chemical Co.

Embossing Rolls
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Midvale Company
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

Emulsifiers
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Enzymes
Rohm & Haas Co.

Evaporators
Foster Wheeler Corp.
General American Transportation Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

Expanders
Mount Hope Machinery Co.

Fans
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

Feeders
Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup

Felts
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

UNITED BLACKS

DIXIE
KOSMOS
PARIS BLACKS

Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.

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NEW YORK
CHICAGO
CHARLESTON 27
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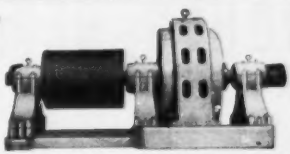
CANADA:
CANADIAN
INDUSTRIES, LIMITED

REBUILT by CHICAGO ELECTRIC



Partial Listings of Fine Items Especially Suited for Paper Mill Use.

MOTOR GENERATOR SET
200 KW DC generator, General Electric, type MPC, 250 volt, 800 amps, 1200 RPM, direct connected to,

SYNCHRONOUS MOTOR
300 HP General Electric, type TS, 3 phase, 60 cycle, 440 volt, .8 P.F. 1200 RPM.

D.C. MOTOR
250HP General Electric, type MPC, form A, 245 volt, 730/975 RPM, with complete starting and control panels.

SQUIRREL CAGE MOTORS
Totally Enclosed Fan Cooled

HP	Make	Type	Volts	Speed
125	Gen. Elec.	K—TEFC	440	1200
75	Gen. Elec.	K—TEFC	220	1200
60	Gen. Elec.	K—TEFC	220/440	1200
60	Gen. Elec.	KG—TEFC	220/440	1200
60	Gen. Elec.	K—TEFC	220/440	1800
50	Wolphse.	CS—TEFC	440	1200
50	Gen. Elec.	K—TEFC	220/440	1800
40	Gen. Elec.	K—TEFC	220/440	1200
40	Wagner	CP—TEFC	220/440	1800
40	Gen. Elec.	KF—TEFC	220/440	1800
30	Gen. Elec.	KF—TEFC	220/440	1200
30	Gen. Elec.	K—TEFC	220/440	1800
25	Gen. Elec.	K—TEFC	220/440	1200
25	Wolphse.	FR—TEFC	220/440	1200
25	Gen. Elec.	K—TEFC	220/440	1800

SPECIAL OFFERING
SLIPRING MOTOR

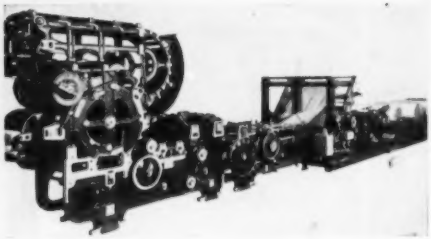
HP	Make	Type	Volts	Speed
600	Gen. Elec.	I-M	440	350

SPECIAL
SYNCHRONOUS MOTORS

HP	Make	Type	Volts	Speed
	Al. Chlrs.		2200	720
200	Al. Chlrs.	PF	2300	360

ENGINEERS, REBUILDERS AND DISTRIBUTORS OF FINE POWER EQUIPMENT SINCE 1910

CHICAGO ELECTRIC CO.
1325 W. CERMAK RD. CHICAGO 8, ILL.



Machine illustrated is a large S.O.S. Multi-wall unit capable of making a maximum size bag 19" x 14" x 64".

Weber machines are known throughout the world.

Write in requesting our bulletin describing the complete line of Weber machines.

H. G. WEBER & CO., INC.
KIEL, WIS., U.S.A.

JONES-BERTRAMS
★ **PATENT BEATER**
E. D. JONES & SONS COMPANY • PITTSFIELD, MASS.

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THE KINSLEY CHEMICAL COMPANY
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CARTHAGE, NEW YORK
Manufacturer of
Machinery and Equipment for Mechanical and Chemical Pulp Mills and Special Machinery

QUALITY PAPER
QUANTITY PRODUCTION
APPLETON FELTS
APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

Where

Felt Cleaners
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

Felt Guides
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

Fillers
American Cyanamid Company, Industrial Chemicals Division
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Witco Chemical Co.

Filters
R. P. Adams Co., Inc.
Bird Machine Company
Cochrane Corp.
General American Transportation Corp.
Hardinge Company, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Walworth Company

Fittings
Crane Company
Ladish Company
Phoenix Products Co.
Walworth Company

Flooring, Grating and Treads
The Goodyear Tire & Rubber Company
Norton Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division

Flow Boxes, Stainless-Clad
Lukens Steel Co.

Forming Machines
Black-Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Friction Materials
Johns-Manville Sales Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division

Freeness Testers
Testing Machines, Inc.

Gaskets
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Gears
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corp.

Grinders
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

Grinding Wheels
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Norton Company

Guides, Web
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.

Gums
National Starch Products Inc.
Stein-Hall Co., Inc.

Heads
Babcock & Wilcox Co.
Lukens Steel Company

Heat Exchangers and Recovery Systems
William Allen Son's Company
Foster Wheeler Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

Heating, Ventilating & Air Conditioning
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

Hoists
Appleton Machine Co.
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

Hose (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Impregnants
American Anode Div., The B. F. Goodrich Chem. Co.

Industrial Tractors
Clark Equipt. Co., Clark Tractor Div.
Towmotor Corp.

Instruments, Testing and Measuring
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

Joints
Johnson Corp.
Perfecting Service Corp.

Jordan Fillings
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Knives
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

Knot Boring Machines
DeZurik Shower Company

Laboratory Equipment
William Allen Son's Company
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies

to Buy

Testing Machines, Inc.
Valley Iron Works Co.

Lay Boys
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.
Suburban Machine Co.

Lubricants
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

Materials Handling
Cleveland Crane & Engrg. Co.

Micrometers & Calipers
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

Moisture Content Control
Stickle Steam Specialties Co.

Motors and Generators
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

Nickel and Nickel Alloys
The International Nickel Co.

Nozzles
Link Belt Company

Packing Boxes
Johnson Corporation
The Moore & White Co.
Perfecting Service Corp.
Shartle Brothers Machine Co.

Packing
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.

Paint
American Marietta Co., Valdura Division

Paper Machines
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

Paper Machine Slices
Black-Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

Paper Tube Machinery
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Suburban Machine Co.

Pasting Machines
Black-Clawson Company
Davis, Frank H., Co.
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

Penstocks
The Biggs Boiler Works Co.

Perforated Metal
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.

Pipe
American Cast Iron Pipe Co.
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Johns-Manville Sales Corp.
Ladish Company
Michigan Steel Casting Co.
Stowe-Woodward, Inc.
Walworth Company
Youngstown Welding & Engrg. Co.

Pipe Fittings
American Cast Iron Pipe Co.
The American Rolling Mill Co.
Crane Company
Ladish Company
Michigan Steel Casting Co.
Phoenix Products Co.
Walworth Co.

Pitch Control
General Dyestuff Corp.
Monsanto Chemical Company
Rohm & Haas Co.

Platers
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

Plates
Armco Steel Corp.
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld
Lukens Steel Company
Timken Roller Bearing Co.

Plugs
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

Precision Sample Cutter
Testing Machines, Inc.

Preservatives
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

Pressure Vessels, Steel and Alloy
William Allen Son's Company
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
General American Transportation Corp.
Foster Wheeler Corp.
The Midvale Company

Presses
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

Pulp Classifier
The Bauer Bros. Co.

Pulp Stock Valves
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

Pulpers
Bauer Brothers Co.
Dilts Machine Works
Shartle Brothers Machine Co.

Pulps
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
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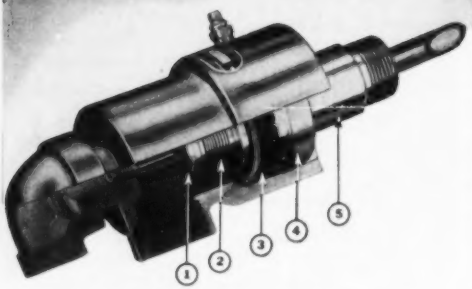

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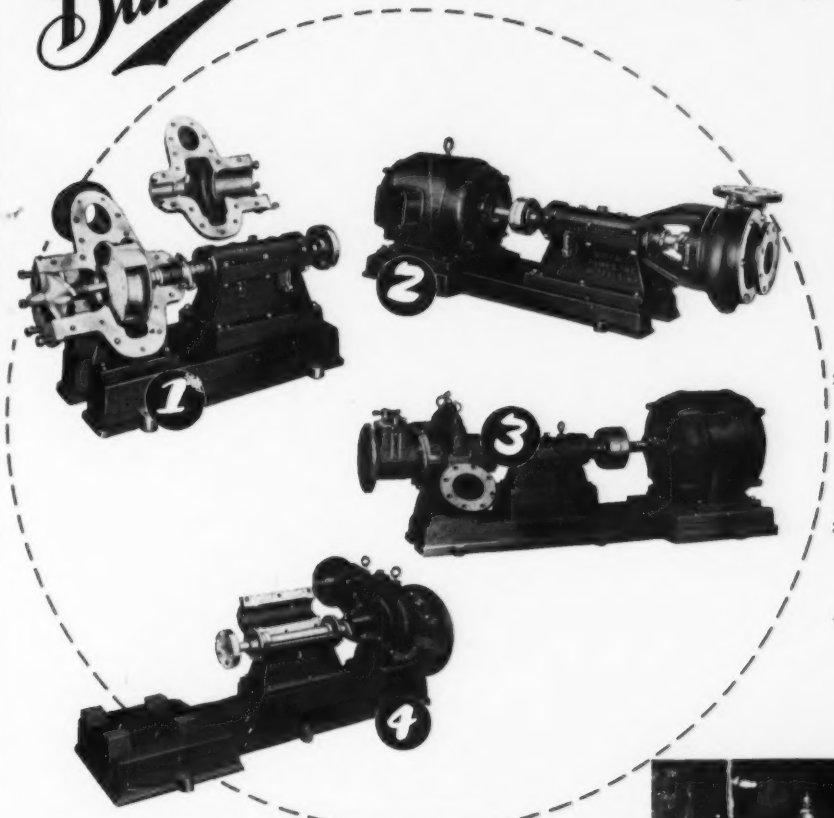

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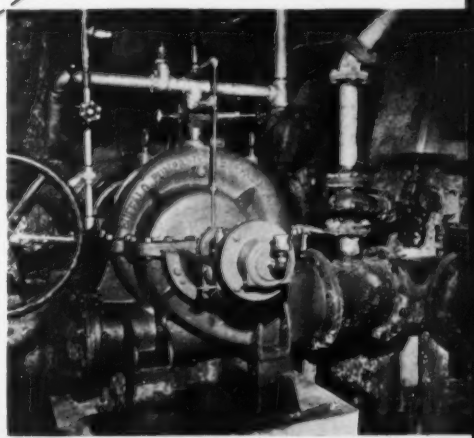

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